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150 Attend Annual Fertilizer Meeting

Illinois Group Told Of TVA, New Trends

URBANA, ILL.—Nearly 150 fertilizer manufacturers, sales representatives, trade association staff members and agronomists gathered at the annual fertilizer conference at the University of Illinois, June 29-30.

Opening the first afternoon session, Dr. George Stanford, chief of the Soils and Fertilizer Research Branch of Tennessee Valley Authority, discussed "Frontiers in Fertilizer Research." He reported that opportunities existed for using more super phosphoric acid in formulating higher analysis liquid fertilizers. TVA researchers have shown that by concentration of wet process acids they can produce super phosphoric acid. Another process with possibilities in fertilizer manufacture involves the conversion of muriate of potash to potassium hydroxide—thus enabling a manufacturer to produce more different analyses of liquid fertilizers.

Dr. Stanford pointed out that at the present time potassium hydroxide is expensive but with larger production, lower costs may be possible. With the new processes that could be adopted, higher analysis liquid fertilizers could be produced in the future.

Another development in the exploratory stage is salt suspension fertilizer. TVA chemical engineers have produced this fluid type fertilizer by using clay in suspending the salts. A stable 14-14-14 fertilizer has been produced with this process.

Dr. Stanford said that research at Illinois and other states has shown no difference in the agronomic value of liquid fertilizers and comparable solid materials.

Dr. Stanford also reported on the area of new types of carriers for ni-

(Turn to MEETING, page 21)

National Survey Of Hoja Blanca Disease Underway

WASHINGTON—A comprehensive federal-state survey of U.S. rice-growing areas for evidence of a destructive disease of rice, hoja blanca, or its insect carrier is underway and will continue through the present growing season, the U.S. Department of Agriculture reports.

Regulatory and research workers in Mississippi, Louisiana, Arkansas, Texas, California and other rice-producing states are cooperating with USDA's Agricultural Research Service in the effort.

Hoja blanca (Spanish for "white leaf" and pronounced "o-hah blänkah") is caused by a virus spread by a plant hopper. Diseased leaves turn streaked yellowish-white, and plants often fail to head.

The disease was first found in the United States in 1957 at the

(Turn to HOJA BLANCA, page 8)

House Passes Measure To Extend Coverage of Pesticide Act of 1947

WASHINGTON — The House of Representatives July 6 passed H.R. 6436, a bill to extend the coverage of the Federal Insecticide, Fungicide and Rodenticide Act of 1947.

The measure, which now goes to the Senate, amends the 1947 act to include nematocides, defoliants, desiccants and plant regulators.

This objective is reached by expanding the present definition of the term "economic poison" to include these additional materials. The bill also amends other definitions in the 1947 act and adds additional ones which are made necessary by the broader coverage. It does not, however, change provisions of the act as they relate to presently-regulated products.

The bill, as passed by the House, subjects the new products to the same labeling, registration and regulatory controls under the act as now apply to agricultural chemicals used for pest control purposes.

A companion bill (S. 1900) to the House measure was introduced in the Senate on May 11. Both the measure passed by the House and the Senate bill now will be considered by the Senate Committee on Agriculture and Forestry.

The proposed legislation has received widespread support from the industry. In May L. S. Hitchner, executive secretary of the National Agricultural Chemicals Assn., appeared before a House committee, where he expressed the hope that the amendment would be passed at this session of Congress.

A complete text of H.R. 6436 appeared on page 8 of the May 4 issue of Croplife.

Heredity, Not Insecticides, Cause of Resistant Insects, Researcher Concludes

MADISON, WIS. — Insecticides do not cause individual insects to become resistant to poisons. But they can make an insect population more resistant by weeding out those which do not inherit resistance from their parents.

That's the conclusion reached by J. F. Crow, University of Wisconsin geneticist, and graduate students working with him after several years' study of DDT resistance in fruit flies.

Though Dr. Crow's finding does not give a simple solution to the problem of DDT-resistant insects, it does show definitely how development of resistance comes about.

Dr. Crow's test shows that resistance is not acquired—the poison does not change an insect's genes, or hereditary determiners, nor change the insect in any non-genetic way to cause resistance.

Rather, he says, insects with genes for DDT resistance are already present in most insect populations; the poison kills off insects which aren't resistant, leaving only the resistant ones to breed future generations.

Since the resistance is inherited, the surviving population contains a high percentage of resistant insects.

The question is actually the same one which faced early students of

(Turn to INSECTS, page 20)

USDA Reports Hall Scale Pest Wiped Out in U.S.

WASHINGTON—Unless continuing inspections turn up live insects during the next 12 months, the Hall scale—a tiny but destructive stone-fruit and nut insect pest—can be considered wiped out in the U.S., the U.S. Department of Agriculture has announced.

No Hall scale has been found since 1957, when the last trees in north-central California known to

(Turn to HALL SCALE, page 8)

Potential Increased Use Estimated . . .

Georgia County Agent Survey Shows New Importance of Corn, Pasture Fertilization

By P. J. BERGEAUX
Extension Agronomist—Fertilizer
University of Georgia

Prior to World War II the greater part of fertilizer used on agronomic crops in Georgia was appled to cotton and tobacco. Cotton received the largest part of total amount used. This was due primarily to the large acreage planted to cotton and to its relatively high fertilization rate. Corn, if fertilized at all, received what was left after cotton and tobacco had been fertilized.

Since World War II and particularly in recent years, Georgia's agriculture has rapidly changed. Acreage controls and other government programs have drastically reduced the acres planted to cotton and tobacco. This, plus other factors, has resulted in a shift from primarily a row crop economy to one combining row crops and livestock.

Expanding interest in livestock farming has led to an increase in improved pasture acreage and the need for high quality forage has resulted in increased pasture fertilization.

Corn, previously considered as a necessary evil, has emerged as an important cash crop. More and more farmers are realizing that through adequate fertilization and other good cultural practices, corn can be grown for profit.

This readjustment of Georgia's agriculture is reflected in the changing pattern of fertilizer use by crops. A recent county agent survey reveals the following interesting figures: Cotton and tobacco accounted for only 10.7% of the total amount of fertilizer nutrients used by farmers in 1958. Cotton represented only 8.4% of the total fertilizer nutrients used and tobacco only 2.3%.

Approximately 77% of the total fertilizer nutrients used by Georgia farmers were applied to corn and pastures. Corn received 44% and permanent and temporary pastures 33% of the total.

This county agent survey reveals

(Turn to GEORGIA SURVEY, page 17)

Construction Set for $17 Million Plant

MONTREAL, QUEBEC—Work is to start soon on a $17 million chemical plant at Maitland, Ontario, announced Sogemines, Ltd.

The company said construction is to begin this summer with the plant expected to go into production early in 1961.

The plant, to be erected on a 300-acre site acquired last year, will produce ammonium nitrate, nitrogen solutions, anhydrous ammonia and hydrogen. The ammonia and hydrogen will be supplied by pipeline to the duPont of Canada, Ltd., works at Maitland, the announcement said.

The plant is to use Alberta natural gas as its principal raw material. About 185 people will be employed.

Sogemines, Ltd., a Canadian company, is affiliated with Societe General DeBelgique of Brussels, Belgium. It holds controlling interests in several Canadian companies.

Connecticut Appropriation Bill Welcome, Refreshing Action

By VINCENT SAUCHELLI
Chemical Technologist
National Plant Food Institute

The Connecticut Senate Bill No. 561, approved this spring, provides:

The sum of $10,000 be appropriated annually to the Connecticut Agricultural Experiment Station for the employment of a scientist to conduct basic quality research on fruits and vegetables grown in Connecticut. This would include research concerning the effects of climate, water, organic matter, sprays, fertilizers and other environmental factors on quality, edibility and health value to consumers.

Statement of purpose: The effect of climate, organic matter, water, fertilizer, sprays and environmental conditions are highly important but little understood factors in the quality of fruits and vegetables. What is needed is basic research. Most tax supported research in plant science is aimed at increasing the efficiency of food production. This results in cheaper food for the consumer. The research proposed here will be aimed at improving the quality. This should result in better food for the consumer. As an additional value, the knowledge gained will be useful to all who work with plants, whether they be trees, fruits, vegetables or flowers.

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This action of the Connecticut legislature is, to say the least, most welcome and refreshing. The thinking behind it reveals confidence in the scientific method. The problem is immensely complicated. Quality, edibility and health value of foods depend upon a large, intricate mass of interrelated genetic and environmental factors. For one scientist—as the bill provides—to study the effects of climate, water, organic matter, fertilizer, pesticide sprays and soil variables on the health-giving qualities of food crops is, perhaps, asking for the impossible. However, the selectee will undoubtedly have the cooperation of the scientists at the local experiment station. Whatever the means, the significant thing, to me at least, in this bit of legislation is the recognition of the importance of getting maximum quality as well as quantity in our farm crops and the provision of a special fund for this exclusive project.

Directly or indirectly we depend upon the so-called higher plants for most of our nutrition. The nutritive value of such plants is the result of genetic and environmental variables. Fertilizer is only one of the many influences which affect such value. Light, water, climate and soil have much to do with the ultimate composition of the plant. To isolate and evaluate the respective effects of each major factor on the ultimate nutritional quality of the food crop is a bewilderingly difficult problem.

Insofar as the fertilizer factor is concerned, a considerable body of research data has already been accumulated. This information indicates quite definitely that soil fertility can and does influence the nutritive value of food and feed crops. Chemical fertilizers applied to soils either to correct plant food deficiencies or increase the level of soil fertility serve to build up the nutritive value of crops, despite the contentions of certain "prohumus advocates." Dr. C. H. Mahoney, an outstanding horticultural authority, after reviewing a great accumulation of field and greenhouse experimental data in 1950, reported to the American Society of Agronomy that the evidence strongly refuted the allegation that chemical fertilizers reduce the nutritive value of fruits and vegetables grown for human consumption. He pointed out that high yields and high quality of such food crops need an ample, balanced supply of plant nutrients in the soil. Furthermore, he declared that it is immaterial to the plant whether these nutrients are supplied by organic or inorganic sources. Many authorities in all the countries of the world have published the results of their investigations on this problem of how nutritive value may be influenced by environmental factors. The general consensus is that chemical fertilizers can be regarded as a favorable factor in the improvement of nutritional quality and in increasing the quantity of our food crops.

Although such favorable evidence is substantial it must be admitted the data are still fragmentary. However, enough evidence exists showing the effects of fertilizer, light, water, and soil to support the purpose of the Connecticut legislation. That effort will certainly not be a waste of time and money. It is to be hoped that other state legislatures will emulate the progressive attitude of Connecticut.

Allen Donaldson

Dick Williams

Miller Products Co. Names Two Salesmen

PORTLAND, ORE. — Roy Miller, president of Miller Products Co., Portland, announced the appointment of two additional sales representatives.

Allen Donaldson, who returns to Miller Products Co. after two years absence, takes over small package sales in the Portland and lower Columbia area of Oregon. Mr. Donaldson was raised in Idaho and graduated from Oregon State College in agricultural economics.

Dick Williams comes to Miller Products Co. after four years agricultural chemical sales experience and will represent the company in eastern Washington and northern Idaho. Mr. Williams was born and raised on a large farm in South Africa, is a graduate of the University of Georgia in entomology.

California Employment Up in Chemical Industry

SAN FRANCISCO — Employment in chemical manufacturing industries moved up again, though only fractionally, between April and May of this year, estimates the division of labor statistics and research of the California State Department of Industrial Relations.

The number of persons at work producing all kinds of chemicals in the state reached 38,600 during that month, as compared with 38.500 in April, and only 37,300 during May of last year, when the industry suffered a slump.

Production workers in the agricultural chemical division of the chemical industry dropped their average weekly earnings between the two months from $100.44 in April to $99.77 in May, but the increase over the previous May was about $4.50—from an estimated average of $95.22.

The April-May decrease came largely as a result of a shorter average work week during the month. Average hourly earnings rose from $2.38 to $2 41, compared with $2.30 in May, 1958; and the work week dropped from 42.2 hours to 41.4. This was the same as in May of last year.

55,000 ACRES SPRAYED

CLOVIS, N.M.—Approximately 55,000 acres of cropland have been sprayed in the county's all-out war against grasshoppers, but the threat of a severe infestation still remains.

Average cost for the aerial spraying was around 70 cents an acre, according to Phil Crystay, Curry County extension agent. The total for the over-all spraying by the county's farmers was about $385,000 for this year.

Small Packages Given Credit for Sales Rise Of Fertilizer, Pesticide

SHREVEPORT, LA.—An increasing percentage of fertilizer and insecticide sales in this area can be attributed to small packaged goods, according to J. A. Boogaerts of the Planters Seed Co. His firm which sells both retail and wholesale in northern Louisiana, southern Arkansas and part of Texas, has found an rising demand for agricultural chemicals in small packages.

"Mostly it is for the garden, lawn and orchard," he said. "People are becoming more aware of insect damage and the need for fertilizer. Also more people are now living in a casual, out-doorsy manner, which has made the garden and lawn almost as important as the house."

Mr. Boogaerts says his company sold over 3,000 cases of small goods the last 12 months, for an appreciable increase over former years.

Best Fertilizers Announces Appointments

LATHROP, CAL.—Dr. W. L. Garman, vice president in charge of sales for the Best Fertilizers Co., has announced the appointment of Robert and Leland Hawkins to serve as district sales managers in Fresno and southern California respectively.

The Hawkins brothers, natives of Redlands, have long-time agriculture sales experience.

Robert Hawkins holds a degree in soil science from California State Polytechnic College in San Luis Obispo. Prior to his appointment to the position in Fresno County, he served Best dealers and distributors in southern California.

Leland Hawkins, a graduate of Redlands University, holds a B.A. degree in business administration and has done graduate work in the sciences. His territory covers Los Angeles, Orange and San Diego counties as well as parts of Riverside and San Bernardino counties.

Meanwhile, A. B. "Jack" Horner, manager, nematocide division of the Best Fertilizers Co., has announced the appointment of Ross Wright, Fresno, to assist in division and sales management activities.

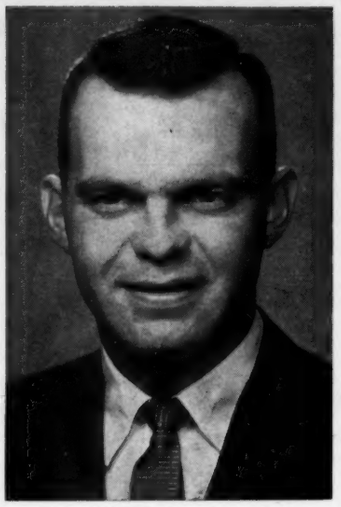
Mr. Ross, a native of Canada, received his formal education at the University of Western Ontario and Liverpool University in Canada.

Since 1952, the new assistant manager has served the farm supply field in northern California with headquarters in Chico.

Headquartering in Fresno, Mr. Ross will serve the nematocide division throughout California.

FORUM THEME ANNOUNCED

NEW ORLEANS—"Changing Marketing Methods in Southern Agriculture" will be the theme of the 13th annual Southern Farm Forum to be held Jan. 21-23, 1960, at the Roosevelt Hotel in New Orleans, La., announced A. J. Rhodes, chairman. The two-day program will feature panels dealing with pertinent problems that farmers in the South are facing. The purpose of this forum, which is sponsored by the Agricultural Committee of the New Orleans Chamber of Commerce, is to provide a medium for public discussion of important farm problems affecting the South.



William B. Dailey

JOINS SALES STAFF—William B. Dailey has joined the agricultural chemicals sales section in the Houston, Texas, office of the Dow Chemical Co. He will serve the eastern part of Texas. A native of Stillwater, Okla., Mr. Dailey was graduated in 1955 from Oklahoma State University where he majored in animal husbandry and business administration. After serving for three years in the U.S. Marine Corps, Mr. Dailey joined Dow early this year.

Idaho Fertilizer Plant Starts Full Operation

GEORGETOWN, IDAHO — The plant of Central Farmers Fertilizer Co., here in Bear Lake County is now in full operation.

The plant was built at a cost of $16 million and was designed and built under direction of the H. T. Ferguson Co. Central Farmers is one of the first in the chemical fertilizer industry to use elemental phosphorus rather than sulphuric acid in the technical process of manufacturing the superphosphate.

Raw phosphate from the mountainside is roasted in a gigantic kiln measuring 260 ft. in length with 9 in. of firebrick. The resulting nodules will be fed into an electric furnace to obtain elemental phosphorus.

The substance will then be transformed into the familiar sand-like granules of high analysis superphosphate.

Central Farmers, an inter-regional cooperative, will ship fertilizer in bags or in bulk to over 22 member firms for distribution to farmers.

The mining operation is carried out under a contract to the Wells Cargo Co. of Las Vegas, Nev. The raw phosphate ore is transported to the plant on a 36 in. wide conveyor where it is stockpiled, since the mining of the ore can be carried on only during late spring, summer and early fall.

The permanent processing plant force averages 320 men.

Industry Veteran Named Korean Plant Manager

NEW YORK — John J. O'Leary, member of the synthetic ammonia industry for nearly 40 years, left for Korea recently to become plant manager of Korea's new $35 million urea fertilizer facility at Chung-ju.

McGraw-Hydrocarbon, builders of the recently completed plant, are also in charge of operations and the training program for a period of two and a half years. The urea facility will require many American technicians and Korean trainees for operation and maintenance. Under the program Korean trainees will gradually replace American personnel. American supervisors will bring families to Korea as new housing becomes available.

Mr. O'Leary, formerly with Allied Chemical Co. and American Cyanamid, is from Metairie, La.

For Highest Yields . . .

Georgia Corn Growers Combine Adequate Fertilizer Use, Proper Number of Stalks

ATHENS, GA.—Some of Georgia's top corn growers say that adequate fertilizer is most important, but must be combined with having enough stalks of corn on the ground to get a good production of the grain.

Agronomists say that the record-breaking yield in 1958 of 32 bushels of corn per acre in Georgia could be doubled with a little additional work and more fertilizer and seed.

Ted Hudson of Irwin County had 130 bu. per acre average on his 30-acre plot, but used only recommended amounts of 5-10-15 and 33-0-0 on the crop. His answer was the adequate supply of stalks per acre. His cost per bushel was only 68¢.

Palmer Bazemore of Screven County increased his use of 5-10-15 and 33-0-0 for a per acre yield of 94 bu., which cost him 53¢ a bushel of corn. His answer lies in the 9,306 plants per acre.

These and other farmers were making high yields of corn while the majority of the state's farmers were making only about 32 bu. to the acre. The 32-bu. men were spending about as much on fertilizer and on production costs, but were not following recomended practices.

An extension agronomist said that some farmers use as much as 1,000 lb. of fertilizer under their corn, along with 300 lb. of 33-0-0, yet produce only an average amount of corn. He says this is because many of them have only about 5,000 stalks per acre.

The recommended amounts of stalks vary in the northern part of the state and the southern extreme. They vary from 8,000 to 10,000 plants per acre in south Georgia to 10,000 to 12,000 in north Georgia.

But the two limiting factors in corn production in Georgia, the agronomist noted, are the lack of adequate nitrogen and a shortage of plants per acre. Many farmers use the proper amounts of fertilizer, but not the correct analysis. Soil tests can help the farmer in getting the best fertilizer for his individual soils.

Oregon Inspection Fee On Fertilizers Now Subject to Reduction

PORTLAND—The state inspection fee on fertilizers is now subject to reduction in the state of Oregon, as the result of a new measure passed by the legislature last month in Salem. The Oregon state department of agriculture was given permission to reduce the fee at will from 10¢ a ton, frozen into a law adopted in 1951.

The use of fertilizer has increased so much, that the dime fee has created a surplus in the inspection fund, and the law permits the director of the department to regulate the fee as he sees fit, but never to raise it above 10¢. It is expected that Frank McKennon, director, will announce a lower rate after a series of public hearings this summer.

Other changes in the law will give the fertilizer manufacturer an opportunity to guarantee any minor plant food element which appears on a prescribed list. Until now guarantees have been authorized only for major elements, such as nitrogen, phosphorus, and potash.

The experiment station at Oregon State College is required by law to assist the department in determining what minor elements may be guaranteed, but no list can be established or amended until after a public hearing to give all concerned an opportunity to express their views.

The amendments to the fertilizer law were outgrowths of conferences between the State Department of Agriculture, the Pacific Northwest Plant Food Assn., and the soils department at Oregon State College.

LEADING CHERRY STATE

PORTLAND, ORE.—Oregon sweet cherry producers expect to lead those of all other states in the production of this fruit during 1959 with an indicated output of some 24,700 tons, according to the Oregon U.S. Department of Agriculture Crop Reporting Service. Although Oregon's sweet cherry crop will be 2% below last year it is 13% above average and is the result of a good set at a time when both Washington and California growers face abnormally small crops because of unfavorable growing conditions.

Factors Causing Cereal Rust Being Studied in Colorado

FORT COLLINS, COLO.—The subject of a study currently being conducted at Colorado State University is how such factors of environment as light, temperature and humidity affect behavior of rust organisms on cereal crops.

A primary objective is to investigate the possibility that rust epidemics can be forecast and damage held to a minimum.

Research is being carried out by Robert G. Hacker, with Lester E. Dickens as project leader. Both are assistant pathologists at the experiment station.

Tests now in progress involve checking to what degree the presence of one type rust may inhibit development of another more serious type. This phenomenon called "cross protection" or "antagonism," may explain why a certain rust race is a problem in an area one year and not the next.

Within the wheat stem rust fungus, more than 300 distinct races have been identified. Yet there's little doubt that many other genetic variations exist, the pathologists say.

Identification of races is determined primarily by type of infection the rusts produce on 16 varieties of wheat. In other research, Mr. Hacker has found that some chemicals and antibiotics have given excellent control of stem rust.

NEW STORE OPENS

GARDEN CITY, IDAHO—John Brock and George Porter are the owners of the new "Out Post" store here. The facility will carry a full line of garden seeds, plants and feed, plus a complete line of sporting goods. The business will be operated by the owners and members of their families.

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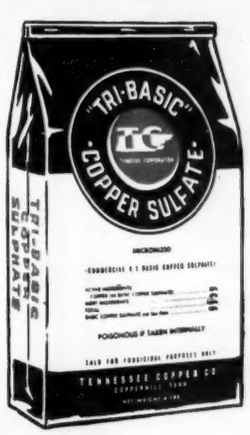

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INSECT, PLANT DISEASE NOTES

Spotty Rainfall Produces Grasshoppers in Missouri

MT. VERNON, MO.—Ray Graham, Lawrence County agent, reported that spotty rainfall in June has produced a heavy early crop of grasshoppers in this area.

Mr. Graham said he is urging farmers to start fighting the hoppers as soon as possible in an attempt to prevent a serious infestation of the insects.

The county agent also noted that there appears to be a larger than normal hatch of chinch bugs. He warned farm operators to be on the lookout for the bugs moving out of small grain fields into early corn, sorghum and sudan fields.

He said agricultural officials are keeping a close vigil on the situation.

Increased Insect Activity Noted in Colorado

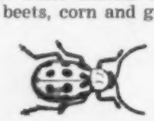
FT. COLLINS, COLO.—The Colorado Insect Detection Committee has reported increased insect activity with continued warm weather.

In Delta County, the rosy apple aphid has been a problem in several orchards. Controls have ranged from poor to fair. The winged migrant form predominates and migration to summer host plants is now taking place. Delta County also has a light infestation of alfalfa weevil, but parasitism is high.

Montrose County reports that onion thrips are beginning to appear in onion fields, but counts are low at present. Alfalfa fields show light population of both weevil larvae and the pea aphid.

Some increase in lygus bug activity has been noted in Mesa County alfalfa fields and in some peach orchards. Sugar beet fields show a few beet leafhoppers and some aphids have been found in tomato fields. Little other insect activity has been noted.

Unsprayed alfalfa fields in Garfield County show light infestations of weevil larvae, compared with the state. Few other insects were noted on sugar beets, corn and grain.



9,000 Utah Acres Treated for Mormon Cricket

LOGAN, UTAH—Some 9,000 acres of federal land in San Juan and Daggett counties have been treated to prevent "Mormon" cricket infestation.

The plant-pest control division of the USDA, under direction of H. F. Thornley, federal collaborator at Utah State University, completed the control work during the past week.

Dr. George F. Knowlton, USU extension entomologist, said the area, mostly forest and range land, included 3,000 acres in Daggett County near Manila and another 6,000 acres west of Monticello in San Juan County.

There have been a few other reports of crickets from Unitah, Duchesne, Tooele and Washington counties, Dr. Knowlton stated, but infestation is light and too scattered to justify control.

Aircraft baited the areas with steam rolled wheat mixed with aldrin. The crickets were "hit before they built up in great numbers," he said.

The USDA reported about 60,000 acres will be treated from mid-July to mid-August to control grasshoppers. The areas to be treated include the Manti-LaSal and Dixie National Forests extending from Mt. Pleasant to Bryce Canyon, at altitudes of 8,500 to 10,000 feet.

Wyoming Starts 1959 'Hopper Control Program

CHEYENNE, WYO.—The state's 1959 cooperative grasshopper control program was due to start about July 10, according to Everett W. Spackman, State Agriculture Department entomologist.

Johnson County landowners are in the process of completing their sign-up for a control program estimated to cover about 143,000 acres, Mr. Spackman said.

Infestations cover about 50 000 acres northwest of Buffalo, 47,000 acres in the Billy Creek area south of Buffalo, 10,000 acres southeast of Buffalo, about 30,000 acres south of Lake Desmet and a relatively small area in the south end of the county.

He stated there are infested areas in several other sections of the state where it appears there will be signups. They include 5,000 acres northwest of Meeteetse in Park County and 8,000 to 16,000 acres in Goshen County, north of Lingle and southeast of Torrington.

Fire Ants Start Trouble in Mississippi

JACKSON, MISS.—Fire ants are causing trouble in some areas of this vicinity. While not widespread yet, many of the mounds are being treated chemically to stop the hard-biting pest.

When treating individual mounds, the most effective remedy seems to be liquid dieldrin. For an entire yard or acreage, the same material in powdered form is being used.

Lygus, Fleahoppers Bother Arizona Cotton

TUCSON, ARIZ.—Lygus, fleahoppers and other early-season cotton pests are becoming serious in many central Arizona cotton fields at this time, according to a recent survey.

Jim Carter, Maricopa County agent, has reported that both black and green fleahoppers are present in high numbers in most fields. Lygus also have been found in many cases, but the population of this pest is erratic and constitutes a potential rather than an actual threat at this time.

Jim Hazlitt, Yuma County agent, stated that cotton bollworms are damaging young squares of cotton in some sections of his county. Lygus populations are high in alfalfa and can be expected to move into cotton shortly.

Leon Moore, University of Arizona survey entomologist, reported that fleahoppers are causing damage to cotton in almost all of central Arizona. Thrips continue to be a problem in higher elevations.

Ohio Entomologist Picks 10 'Most Likely' Pests

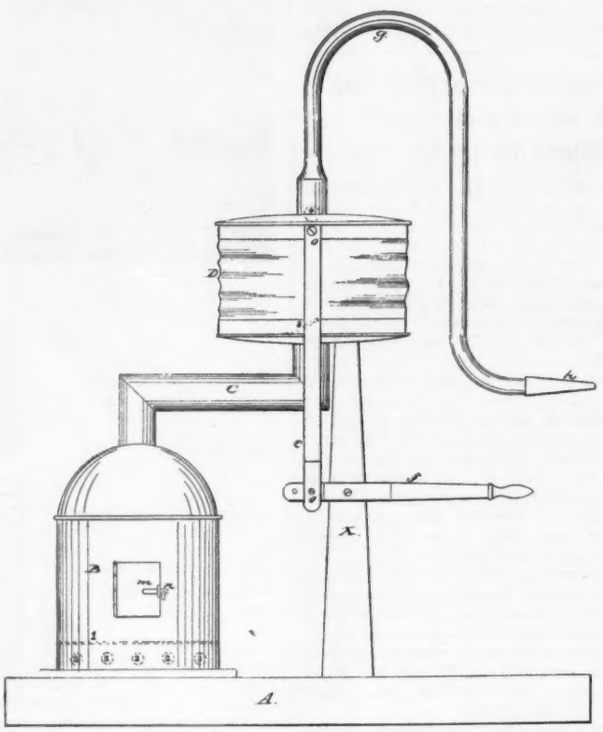
COLUMBUS, OHIO—The meadow spittle bug, potato leaf hopper and European corn borer are among 10 pests selected most likely to succeed on Ohio farms this summer.

According to Robert Holdsworth, extension entomologist at Ohio State University, pests such as these are costing Ohio farmers several million dollars every year despite extensive efforts to control them.

Mr. Holdsworth expects the following 10 pests to gorge themselves again this summer on state crops and livestock:

- European red mite—"Without preventive sprays," Mr. Holdsworth said, "apple growers couldn't put out a crop because of these pests."
- Meadow spittle bug—Affecting clover and alfalfa usually in the early spring, this insect is capable of stunting plant growth, although it seldom kills a whole crop. Half-million acres of alfalfa are sprayed every year in the state to protect crops against this bug.
- Army worms—A light infestation of these three-quarter-inch brown worms was found recently in Defiance and Henry counties. But Mr. Holdsworth doesn't expect an uncontrollable outbreak to occur.
- European corn borer—This caterpillar bores into the stalks of sweet corn and remains there, sapping the life out of the corn. The Agriculture Department, however, has produced a strain of corn resistant to the borer.
- Potato leaf hopper—Damaging particularly to Ohio's alfalfa crops, the hopper flourishes in dry weather. As it feeds, it secretes saliva that plugs up tubes carrying water to alfalfa leaves. "I expect if it gets dry," Mr. Holdsworth said, "there will be damage to the third growth of alfalfa this summer."
- Scab mite—Sheep can be weakened until they lose weight or die when this mite infects their skin. Scab mites are highly contagious.
- Horn flies—Also blood feeders they never leave an animal until they lay their eggs. Mr. Holdsworth said he had seen as many as a thousand on one bull.
- Common house flies—Pink eye, ser-

Saga of Insect Pest Control



FOR THE DESTRUCTION of curculio and other insects "on fruit trees, vines and plants," an inventor by the name of Edward Gilliam of Allegheny, Pa. patented a huffing and puffing device in 1866 which he termed a "new and useful improvement in apparatus" for this purpose.

Mr. Gilliam's device consisted of an arrangement of furnace, bellows, and conducting pipes so that the smoke or gas formed in the furnace might be forced out through a flexible pipe to do the job of controlling the bugs.

The above drawing, taken from the files of the U.S. Patent Office, is described in the patent papers as follows:

"A represents the base of the apparatus. B represents a furnace, which is furnished with a grate, as indicated by the dotted lines marked 1, and with air-holes, as indicated by the dotted lines marked 2. *m* represents the door of the furnace. *n* represents the door-latch. C represents a pipe, which connects the furnace B with the bellows D, which is furnished with valves, as indicated by the dotted lines marked 3 and 4.

"The bellows D is mounted on a column marked X, and is operated by means of levers *e* and *f*. The joints of said levers are indicated by *o*. On the upper side of the bellows, over the valve marked 4, is attached a gum hose, *g*, which is furnished with a suitable nozzle, marked *h*.

"The object of my invention is the destruction of curculio or insects on fruit-trees, vines, and plants. This is accomplished by forcing a smoke or gas on, around, and about the tree, vine, or plant, and into the hiding places of the curculio or insects."

ious to cattle in Ohio last year, is spread by them.

● Termites — Mr. Holdsworth says there isn't a town or community free of termites. They, of course, cause extensive damage to farm buildings.

● Stable flies—These blood feeders probably are causing more economic loss to farmers then any other insect in the state, Mr. Holdsworth said. After flies start feeding off cows, milk production falls steeply.

Corn Borer Outlook In Iowa Improves

AMES, IOWA—It appears now as though the first brood of corn borers in Iowa will not be a serious threat to the field corn crop, said Earle Raun, Iowa State College entomologist.

Mr. Raun said it is economically profitable for farmers to spray for corn borers when 75 out of 100 plants show signs of feeding. Sprays or granular preparations of DDT or endrin appear to be the most economical to apply.

Reports indicate there are few new egg masses, he added.

The smaller borer moth population this year is partially caused by the reduced numbers from last year and the extremely dry weather, the specialist added.

While there is not much threat from the first brood, Mr. Raun said there are still enough seed stock to give a good second brood. This, however, depends a lot on the weather, he added.

Red Leaf Virus Hits Michigan Oat Fields

CASSOPOLIS, MICH. — Red Leaf of oat, an insect-carried virus infection that is causing considerable damage to several Midwest grain areas, also is plaguing some Cass County farmers. It is the same virus that causes yellow dwarf of barley.

Harold L. Sparks, county agricultural agent, says there is no control once red leaf has hit. The disease may be headed off with an insecticide to knock out the carriers, he says.

Mr. Sparks feels that the most important measures are cultural practices to minimize damage. These include early planting, fertilization (especially topdressed nitrogen) and conservation of soil moisture.

Yellow Dwarf Disease Destroys Illinois Oats

URBANA, ILL.—Oat fields throughout southern and central Illinois have suffered serious damage from yellow dwarf disease, according to M. P. Britton, University of Illinois plant pathologist. As high as 100% of the plants in some fields are diseased.

This destructive virus disease is appearing in the northern one-fourth of the state now. Late-planted fields are more likely to be damaged than early-sown fields.

Five species of aphids, including the greenbug, are responsible for spreading the disease. The greenbug has been especially prevalent in central and western Illinois and is responsible for spreading most of the disease there, Mr. Britton points out.

First symptoms of the disease appear as faint yellowish-green blotches near the leaf tip. They enlarge into various shades of red, brown and yellow-orange. These affected portions turn red, and the leaves curl upward and eventually die. The root system is also severely stunted.

The most serious damage occurs when the plants fail to head out. Or shriveling and lower kernel test weight may occur.

University research workers have been trying to isolate strains of oats that show resistance to the disease so that they can develop resistant varieties. One resistant strain has been found. But no resistant variety is yet available.

Various Insects Still Damaging Alabama Crops

AUBURN, ALA.—A variety of insects continue to damage Alabama crops, according to a report by Walter Grimes, Alabama Polytechnic Institute extension survey entomologist. Heavy infestations of Southern corn rootworms are damaging corn so much that some farmers have been forced to plant again.

Armyworms are working on small grain throughout central and southern Alabama, while Mexican bean beetles are occurring in some of the same areas.

Mid-South Crop Conditions Favorable; Insects Build Up

MEMPHIS, TENN. — Mid-South farmers began the month of July with their crops generally in favorable condition, and extension officials in Arkansas, Mississippi, Missouri, and Tennessee were optimistic regarding the harvests of major crops.

Throughout most of Mississippi cotton, corn, soybeans and pastures and vegetable crops were reported in good condition. Cotton was growing fast and was mostly free of grass. Cotton insects remained under good control in most areas of the state but infestations were building up in local hot spot areas. During the last week in June, State Plant Board inspectors found 74% of the fields examined infected with insects. Of the 148 fields found to be infected with cotton insects, 54 had cotton which was not yet squaring while 94 had cotton which was squaring. One field in Union County had a rate of 750 boll weevils to the acre. Tarnished plant bugs were reported to be causing more injury to cotton at that time than any other insects.

Arkansas entomologists reported cotton was beginning to square profusely, with some blooms appearing in older cotton. Peak emergence of overwintering weevils has been reached, they reported, and a definite break has occurred in bollworm generations. Eggs are scarce and larvae are not too numerous.

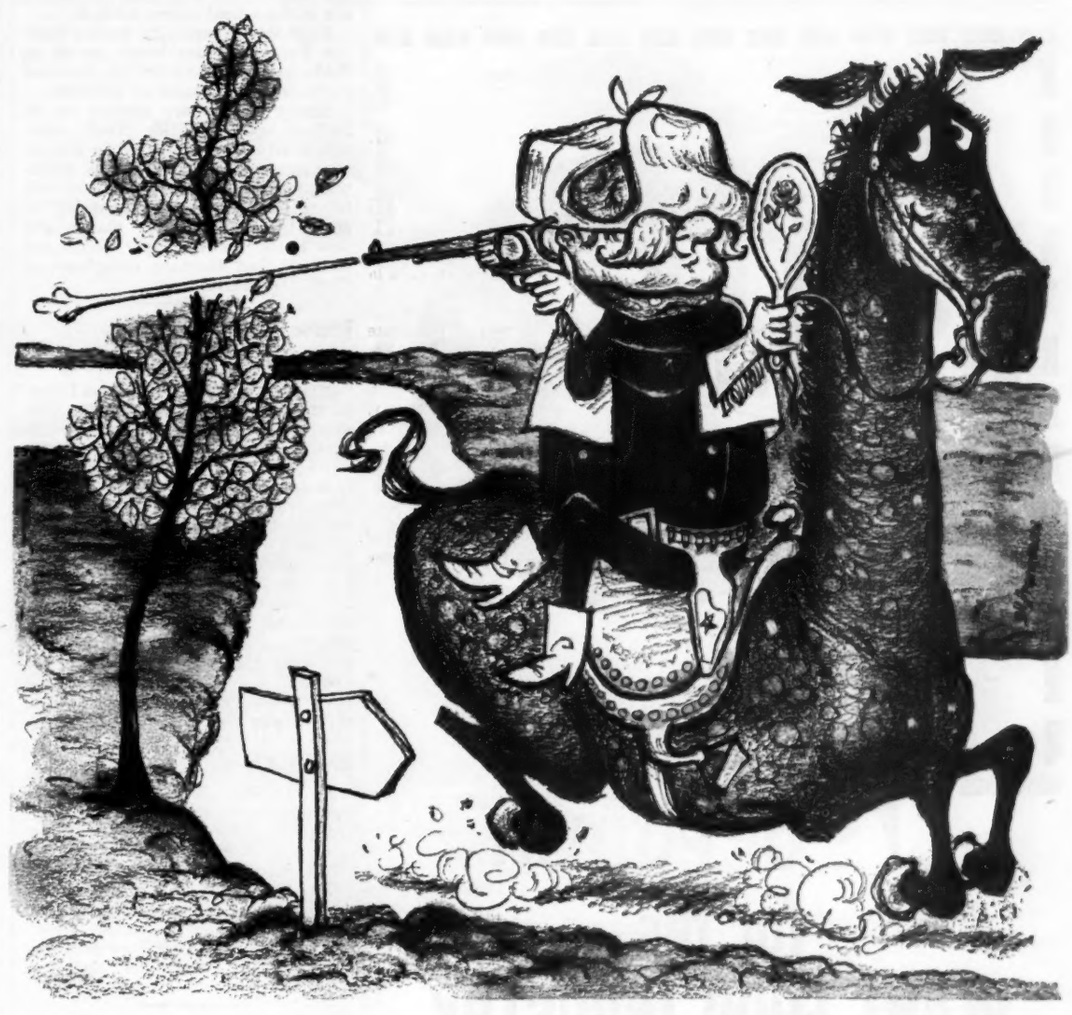
Although crops were reported growing well, extension officials stated a good rain would be beneficial.

Fly-Destroying Fungus Helps California Residents

SACRAMENTO — Ronald Hawthorne, economic entomologist for the California Department of Agriculture, reports a fungus, enthomophthora muscae, is destroying flies and grasshoppers throughout California.

"Many home owners," he said, "have observed fungus infected flies stuck to leaves, shrubs or trees. That means the fungus has struck its lethal blow.

"The fly reducing fungus is not active every year. This year is the first in many that it has been observed causing mass deaths."



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THE LINE RIDER AND HIS GANG of Diamond Chemical killers can rid your roads of troublesome weeds and bushes. They'll do it quickly and save you money like they did out Ohio way, where they saved $18.75 per mile!

Meet the gang:

FOR MIXED BRUSH—LINE RIDER LV-3D/3T, a 2-Ethyl Hexyl Ester formulation of 2,4-D and 2,4,5-T containing 3 pounds each of acid equivalent per gallon.

FOR MAPLES AND OAKS—LINE RIDER LV-6T, a 2-Ethyl Hexyl Ester formulation of 2,4,5-T containing 6 pounds of acid equivalent per gallon.

FOR AREAS ADJACENT TO SENSITIVE CROPS—LINE RIDER AMINE 22, an alkyl amine salt formulation of 2,4-D and 2,4,5-T with 2 pounds each acid equivalent per gallon. Applied as a water-borne spray.

FOR SPECIAL CONDITIONS—Available are other standard LINE RIDER formulations, including Butyl and Low Volatile Esters of 2,4-D and 2,4,5-T containing 4 pounds acid equivalent per gallon.

If you want deadly marksmanship, send for new brochure giving details. Write Diamond Alkali Company, 300 Union Commerce Building, Cleveland 14, Ohio.

Diamond Chemicals

Alabama Fertilizer Sales Up About 40%

ALBERTSVILLE, ALA.—With the return of hundreds of soil bank acres to cultivation, the sale of fertilizer in northern Alabama is up from 30 to 40%. Most of it is used on corn, though fertilizer for cotton land has also increased.

The most widely used mixture is 4-10-7, according to Jim Morgan, who represents the Alabama By-Products Co. in the area. Another reason for larger fertilizer usage has been caused by a growing interest in soil testing. He says the extension service and dealers have been urging farmers to send soil samples to the laboratory at Auburn, and in almost every instance there is an indication of plant food deficiency.

Many farm meetings have been held in the area to explain the soil needs and how fertilizers can increase yields and profits.

The Sand Mountain area, which is still the most densely populated section in the nation, is very low in all plant food. Some farmers have applied as much as 700 lb. of mixed fertilizer per acre, in addition to extra nitrogen.

Another trend in some of this area has been the introduction of anhydrous ammonia.

South Dakota State Plans Insect Laboratory

WASHINGTON—Congress appeared in agreement over a proposed $550,000 insect research laboratory to be built at South Dakota State College in Brookings.

According to Sen. Karl Mundt of South Dakota, the agreement on the site had been made by a joint Senate-House agricultural sub-committee.

Plans include study of insects injurious to corn and small grains and grasshoppers.

Sen. Mundt said the school had assured him that about 60 acres of land would be available for the laboratory.

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'Aggressive' Ants Found In Virginia County

BLACKSBURG, VA.—A species of "highly aggressive" ants has been found in Pulaski County in Virginia, and is said to be widely distributed over North America, according to a recent report from entomologists at Virginia Polytechnic Institute.

The ant, scientifically known as Formica integra, nests in logs and stumps or in the soil beneath stones and other objects. It is very aggressive, the entomologists warn, and can bite fiercely and squirt formic acid into wounds made by its mandibles.

A U.S. Department of Agriculture entomologist says he has records of this particular species partially blinding a small child in Tennessee, and of killing young pigs in North Carolina.

In his regular report on insect activity, Arthur P. Morris, associate entomologist at VPI, notes that the European wheat stem sawfly larvae are causing damage to wheat in several areas. There are no measures that will control this pest once the larvae are in the wheat stems, he says.

Farmers are reporting trouble from the European corn borer larvae in field corn, but there are no chemical controls recommended in Virginia.

Blister beetles are feeding on alfalfa in some counties. Wooly alder aphids have been reported in several counties, and are probably a statewide problem on silver maple at this time. Bagworms are beginning to show up on arborvitae plants, and now is the time to apply sprays and dusts of lead arsenate, toxaphene, or DDT, Mr. Morris said.

Idaho Soil Testing Increasing, Specialist Says

MOSCOW, IDAHO—Charles Painter, extension soils specialist for University of Idaho, reports that the university analyzed 3,000 soil samples during 1958. Mr. Painter recognizes that the volume is large in comparison with former years but feels that the number of farmers and acreage of crops in the state warrant a much larger participation in the soil testing program.

A summary of the 1958 results shows that in southern Idaho 94% of the soils are in a desirable pH range, 5% were highly alkaline and a few samples were acid. On the Snake River plains and lower slopes, organic matter was low in 32% of the soils.

Bemis Elects Treasurer

ST. LOUIS—Bemis Bro. Bag Co. has announced the election of C. C. Hammer as treasurer. Mr. Hammer, assistant treasurer, succeeds T. W. Little, who retired May 31.

Mr. Hammer joined Bemis on Dec. 1, 1958, and was elected assistant treasurer shortly thereafter. Previously he had been associated with Textron, Inc., as comptroller, and with Standard Products Co. as treasurer.

DEMONSTRATION PLOTS

DURHAM, N.H.—The University of New Hampshire here has established corn research demonstration plots on farms in Litchfield and Wilton, it has been reported by Perley D. Colby, Hillsborough County agent. Dr. John T. Kitchin, UNH horticulturist, is in charge of the demonstration projects, which have been established in cooperation with the Cooperative Extension Service.

Dr. Robert Q. Parks Frank J. Ronan

Dr. R. Q. Parks Named Grace General Manager

NEW YORK—Dr. Robert Q. Parks has been promoted to general manager of Grace Chemical Division, W. R. Grace & Co., William J. Haude, division president, announced. Frank J. Ronan succeeds Dr. Parks as general sales manager.

Dr. Parks joined Grace in 1953 as manager of agricultural services. He has served as general sales manager since his appointment to that position in 1955.

Prior to his association with Grace, Dr. Parks was director of the division of soil management and irrigation for the U.S. Department of Agriculture. Earlier he was connected with the Ohio Agricultural Experiment Station at Wooster and the U.S. Plant, Soil and Nutrition Laboratory at Ithaca, N.Y.

Mr. Ronan was formerly midwestern district sales manager for Grace Chemical Division with offices in Chicago.

A graduate of Northwestern University, he was associated with Pittsburgh Coke and Chemical Co. in Chicago before joining Grace in 1954.

In his new position Mr. Ronan is based at the Grace Chemical Division headquarters in Memphis, Tenn.

Soiltest, Inc., Purchased By Cenco Instruments

CHICAGO—Cenco Instruments Corp., manufacturer and distributor of scientific apparatus and laboratory supplies, has announced the acquisition of Soiltest, Inc., Chicago, manufacturer of engineering test apparatus for soils, concrete, asphalt, and similar materials.

The company was acquired from its owner, Theodore W. Van Zelst, for 18,000 shares of Cenco common stock and an undisclosed amount of cash.

John T. Gossett, chairman of Cenco, said the newly acquired company will be operated as a subsidiary of Cenco, with no changes in management. Other Cenco subsidiaries include Central Scientific Co., Chicago; Refinery Supply Co., Tulsa, Okla., and Atomic Laboratories, Berkeley, Cal.

$1.2 Million Appropriated For Boll Weevil

COLLEGE STATION, MISS.—Sen. John Stennis (D., Miss.) has advised Mississippi State University that $1,200 000 has been approved for construction of a modern and well equipped boll weevil research laboratory.

Sen. Stennis, who secured approval of the appropriation, said the Department of Agriculture has authority to proceed with construction of the laboratory as soon as the appropriation bill clears Congress and is signed by the President.

WHEAT YIELD HELPED

HUTCHINSON, KANSAS—"That's what fertilizer can do for wheat," exclaimed Robert Krantz, who farms near Hutchinson. He had just checked returns from a 50-acre tract which was yielding more than 50 bu. to the acre.

Mr. Krantz gave the field 60 lb. of actual nitrogen to the acre in the form of anhydrous ammonia in an application before planting. Then, while he drilled, he applied 70 lb. of phosphate to the acre.

Results were well worth the expense and trouble, Mr. Krantz thinks. He believes his harvest would have been no more than 18 to 20 bu. to the acre without the treatment of soil. The heavy straw residue is the only real problem but he plans to chisel the land in preparing the 1960 seedbed instead of plowing.

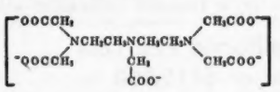
PATENTS and TRADEMARKS

2,891,854

Chelated Iron Compositions. Patent issued June 23, 1959, to Harry Kroll, Warwick, R.I., and Joseph Antognini, Cranford, N.J., assignors to Geigy Chemical Corp., New York. A composition of matter for correcting iron deficiencies in growing plants, especially in alkaline soil, containing from 0.01 to 50% by weight of a compound of the formula

$$M_2[FeY]$$

wherein [FeY] represents the ferric chelate, Y stands for



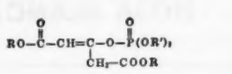
and M_2 is a combination of two elements selected from the group consisting of

H,H
Na,Na
K,K
NH_4,NH_4
Na,H
K,H and
NH_4,H

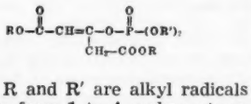
and an agricultural chemical adjuvant.

2,891,887

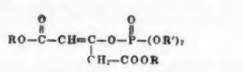
Dialkyl 1,3-Di(Carbalkoxy)-1-Propen-2-YL Phosphate Pesticides. Patent issued June 23, 1959, to Everett E. Gilbert, Morris County, N.J., assignor to Allied Chemical Corp., New York. A vinyl ester phosphate having the following general formula:



in which R and R' are alkyl radicals containing from 1 to 4 carbon atoms. Insecticidal and miticidal compositions comprising a vinyl ester phosphate having the following general formula:



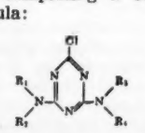
in which R and R' are alkyl radicals containing from 1 to 4 carbon atoms together with a carrier therefor. The process of combating pests including insects and mites which comprises applying to said pests a vinyl ester phosphate having the following general formula:



in which R and R' are alkyl radicals containing from 1 to 4 carbon atoms.

2,891,855

Compositions and Methods for Influencing the Growth of Plants. Patent issued June 23, 1959, to Hans Gysin, Basel, and Enrico Knusli, Riehen, near Basel, Switzerland, assignors to J. R. Geigy A.G., Basel, Switzerland. A method of inhibiting the growth of plants which comprises bringing into contact with at least a part of a plant, an agricultural composition comprising a compound of the formula:



wherein R_1, R_2, R_3 and R_4 each represents a member selected from the group consisting of hydrogen, alkyl, alkenyl, hydroxyalkyl, aralkyl and cycloalkyl radicals and each of the pairs of radicals R_1 and R_2, and R_3 and R_4 together with the corresponding nitrogen atom represents a member selected from the group consisting of five to six-membered alkylenimino radicals and the morpholino radical, in a concentration sufficient to inhibit plant growth.

2,891,889

Insecticidal Compositions Containing Cyclethrin. Patent issued June 23, 1959, to Harry L. Haynes, Bronxville, N.Y., assignor to Union Carbide Corp., New York. An insecticidal composition comprising 3-(2-cyclopentenyl)-2-methyl-4-oxo-2-cyclopentenyl chrysanthemumate and a synergist therefor dispersed in an inert diluent; said synergist being selected from the group consisting of piperonyl butoxide, sulfoxide, n-propyl isome, sesame oil, N-(2-ethylheptyl)-bicyclo-[2.2.1]-5-heptene-2,3-dicarboximide, N-isobutyl undecylene amide, pinene ether of ethylene glycol, piperonyl cyclonene, polyoxypropylene glycol monobutyl ether, sulfone; said 3-(2-cyclopentenyl) - 2 - methyl - 4-oxo-2-cyclopentenyl chrysanthemumate being present in the ratio of from 0.0025 to 10 parts for each part of said synergist.

Industry Trade Marks

.The following trade marks were published in the Official Gazette of the U.S. Patent Office in compliance with section 12 (a) of the Trademark Act of 1946. Notice of opposition under section 13 may be filed within 30 days of publication in the Gazette. (See Rules 20.1 to 20.5.) As provided by Section 31 of the act, a fee of $25 must accompany each notice of opposition.

TNT, in capital letters within diamond-shaped box, for pesticides, rodenticides and insecticides. Filed Feb. 4, 1958, by T.N.T. Exterminating Co., Akron, Ohio. First use May, 1953, on pesticides and insecticides.

Craba-Lawn, in capital letters, for chemical weed exterminator. Filed July 28, 1958 by Mock Seed Co., Pittsburgh, Pa. First use May 1, 1958.

Design, with leters "L-I-K" superimposed, for lawn insect killer. Filed Dec. 12, 1958, by J. & L. Adikes, Inc., Jamaica, N.Y. First use Nov. 12, 1958.

Par-Ex, in capital letters, for plant food. Filed Dec. 1, 1958 by Swift & Co., Chicago. First use Jan. 24, 1958.

ALFALFA FERTILIZER BULLETIN

UNIVERSITY PARK, N.M.—Fertilizer experiments conducted on irrigated Gila clay loam soil at University Park confirm the need of using phosphorus to obtain maximum alfalfa yields, according to a bulletin just published by the agricultural experiment station of New Mexico State University. The bulletin, "Fertilizers for Alfalfa," was written by H. E. Dregne, professor of soils in the agronomy department.

Now! A new form developed by Penick gives full protection at lower cost!

Now . . . more than ever . . . there's no need to abandon your moth-control program during the vital last 30 days of the season!

Exempt under the Miller Bill, Ryania can be sprayed until the day the fruit is gathered . . . **without fear of harmful residues.**

And in Penick's new, improved form . . . RYANICIDE 50 W.P. . . . Ryania adds **new economy** to these well-known recognized advantages:

- ***selective* control of codling moth . . . including resistant strains!**
- **encouragement of beneficial insect species . . . lowered mite populations!**
- **non-phytotoxic . . . will not harm fruit finish!**

RYANICIDE 50 W.P. has proved completely successful in extensive actual-use tests.

Your dealer can supply new RYANICIDE 50 W.P. now. Or write to Penick.

Ryania is covered by Patent Nos. 2,400,293 and 2,590,836.

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HALL SCALE

(Continued from page 1)

be infested by the insect received a final fumigation treatment.

Hall scale was a threat for many years to West Coast commercial orchard and ornamental plantings. Scientists of the California State Department of Agriculture and USDA's Agricultural Research Service have labored since 1941 to rid the state of this pest. Because it was confined to only three communities—Chico, Oroville and Davis, in Butte and Yolo counties—damage was light.

Hall scale was first discovered in this country on fruit trees at Chico in 1934. Some scientists believe it may have entered on apricots and peaches from Chinese and Russian Turkestan as early as 1911 and 1912. The insect is established throughout the Middle East and around the Mediterranean.

Hall scale weakens the trees it attacks and injures some fruits, conspicuously blotching and dwarfing peaches, nectarines and plums. Almonds and prunes are also preferred hosts. In California, in the 30's, it was capable of damaging an estimated 25% of a local peach crop, even after insecticidal spraying.

If not checked, Hall scale could have eventually become a threat to the entire $267 million stone-fruit industry of the United States. Annual losses by growers might have amounted to millions of dollars for control alone, say USDA scientists.

ARS pest control officials are cautious about claiming eradication of any pest. If Hall scale has been wiped off the U.S. map, it joins the ranks of a number of other fruit pests elimlnated before showing U.S. growers the full extent of their destructiveness. The Mediterranean fruit fly was eradicated from Florida in 1930 and again in 1957, after a second invasion. The parlatoria date scale was stamped out in the Southwest and the citrus blackfly was eradicated from Florida in the 1930's. Citrus canker, a bacterial fruit disease, was eliminated from the South in 1943

Intensive federal-state programs that scored these successes included the blitz-like campaign against the Mediterranean fruit fly and the tedious battle against citrus canker, in which scouts traveled by car, foot, plane and boat to ferret out and destroy every infected citrus tree, wild or cultivated.

Compared to these efforts, the Hall-scale campaign has been plodding and undramatic. The insect is spread almost entirely by movement of plants; it is hard to see and kill. It is so small that 2,000 can get on an almond hull. It is able to crawl during only a brief period of its life and most of the time it does not seem to be alive. It hides deep in bark fissures of almond, peach or other stone-fruit trees, or in spirea bushes. A microscope may be needed for detection. Only destruction of trees or fumigation has been completely effective as weapons against Hall scale.

Only 3/10 of 1% of the trees inspected have been found infested—2,960 out of 1,036,645—since the start of the program in 1941. However, since other host trees on infested properties required removal or treatment, 17,784 trees were destroyed and 48,940 fumigated. In all, 42,514 properties in 4,601 blocks of the three California cities were inspected.

Since the last living insect is the crucial one in an eradication effort, surveys must continue as insurance against any survival. They may be the most important yet conducted against the Hall scale. If no live insects turn up, it will still be 1960 before eradication can be considered certain. Meanwhile, plant quarantine inspectors continue to intercept the pest occasionally on foreign-grown plants at U.S. ports of entry.

April Sulfur Production

WASHINGTON—The domestic sulfur industry produced 390,757 long tons of native sulfur and 48,929 tons of recovered sulfur during April, reported the Bureau of Mines, U.S. Department of the Interior.

Producers' stocks of native sulfur decreased from the previous month and at the end of April totaled 4,248,242 tons.

RECEIVES FELLOWSHIP

COLLEGE STATION, TEXAS—Wiley N. Garrett, a graduate of Texas A&M College and now working on his Ph.D. degree at the University of Minnesota, has been granted a Rockefeller Foundation Research Fellowship to continue his studies. He will do research on genetic variation of the fungus that causes the wheat stem rust disease.

Ground Broken for For New Indiana Fertilizer Plant

JASONVILLE, IND.—The Virginia-Carolina Chemical Corp. broke ground here July 7 for a new fertilizer plant that will serve farmers in southwestern Indiana and parts of southeastern Illinois.

The T-shaped structure will be completed and in operation by Jan. 1. In peak seasons, 35 workers will be employed in addition to an office and sales force.

The plant will produce all the analyses of semi-granular fertilizers needed by farmers in this rich region, the firm said.

The plant and machinery were designed by Virginia-Carolina engineers under the direction of Frank C. Richter, chief engineer. The timber frame structure will be 390 ft. long and 105 ft. wide at the top of the "T" and 120 x 90 ft. at the tail. It will have 51,750 sq. ft. of floor area.

Shipping facilities will be provided for both bag and bulk customers, and truck weighing scales will be installed especially for bulk customers. Chester Robinson, V-C engineer, will be in charge of construction.

Sales manager for the new plant will be G. F. Flenniken who has been with V-C for nearly 12 years, starting in East St. Louis, Ill. He became assistant sales manager there in 1955. Later he was promoted to sales manager in Remington, Ind., and more recently was merchandising manager at the company's home office in Richmond, Va.

Plant superintendent will be Mack Tune who started with V-C in 1953 at the Wilmington, N.C. plant. He became an assistant foreman there in 1954 and in 1955 was named foreman in the Birmingham, Ala. plant.

Later, he served as assistant superintendent in the company's Richmond Chemical Works and was superintendent of V-C's Rochester, N.Y. plant. He is now working out of V-C's home office in the manufacturing department.

V-C has 33 other fertilizer plants serving 22 sales offices over the eastern two-thirds of the country. The company also produces phosphorus-related chemicals in Charleston, S.C. and Fernald, Ohio.

Companies Announce Agreement; to Build Ore Roasting Plant

TORONTO—Dr. David E. Jones, president of the Electric Reduction Company of Canada, Ltd., and Herman D. Carus, president of Matthiessen & Hegeler Zinc Co., announced that a long term agreement has been concluded between the two companies.

Matthiessen & Hegeler has formed a Canadian subsidiary, Sherbrooke Metallurgical Co., Ltd., which will build a zinc ore roasting plant at Port Maitland, Ontario, and will supply ERCO with sulphuric acid.

Leonard Construction Co., Chicago, has received the contract award for engineering and construction of the ore roasting plant.

The plant will utilize Canadian zinc ores and will include the first commercial installation in Canada of a newly developed type of fluidized roaster, a Leonard spokesman said.

California Fire Loss Set at $115,000

SACRAMENTO—Preliminary estimates set loss from fire which swept through a barley shed at the California Seed & Fertilizer Co. plant north of Yuba City, Cal., at $115,000.

The shed was owned by Stanley Yori of Reno, Nev., and was used to store about 5,000 tons of barley owned by Balfour Guthrie, Ltd., of London and San Francisco.

Howard Johnson, operator of the seed and fertilizer company, said 1,000 tons of barley may have been destroyed and a like amount ruined by smoke and water. He estimated the building loss at $25,000, the seed firm's loss at $10,000 and the value of grain destroyed at $80,000.

The fire started from a weed burning project on a nearby river levee.

HOJA BLANCA

(Continued from page 1)

Everglades Agricultural Experiment Station, Belle Glade, Fla. Last fall, the disease was found again, at Bay St. Louis, Miss. Eradication measures were applied promptly in both areas. These areas consisted of five fields comprising less than 400 acres.

In 1958 federal-state surveys of 25,000 acres on 500 other farms in the rice-producing areas of Arkansas, Louisiana, Mississippi and Texas, and a state-conducted survey in California on more than 3,000 acres, neither the disease nor its insect carrier was found.

The disease, apparently a newcomer to the Western Hemisphere, has been found in Cuba and several South and Central American countries since 1952. It probably occurred earlier in Colombia. It can greatly reduce yields in infected fields and completely ruin a crop, particularly a late planting. It cut Cuba's 1956 rice crop by an estimated 25% and yields in some Cuban fields by 50%.

Surveyors search both for symptoms of the disease in rice fields and for presence of the disease-carrying plant hoppers.

Work by Venezuelan and Cuban pathologists pointing to the tiny plant hopper as the transmitting agent for the hoja blanca virus was confirmed in 1957 by an ARS entomologist. Efforts thus far to transmit the virus by seed or soil, or even by hand, have failed.

Present research on hoja blanca includes studies of the insect carrier, its relationship to the virus and to host plants and its control with insecticides, a search for host plants of the disease and for resistant varieties of rice, and a build-up of varieties already known to have some resistance. It appears likely that resistance can be successfully transferred to adapted varieties of all rice grain types within a relatively short time.

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SPECIAL MERCHANDISING SECTION

BETTER SELLING

MARKETING NEWS AND FEATURES

Customer Service, Expansion of Sales Program Mean Increased Volume for Busy Texas Dealer

By JESS BLAIR
Croplife Special Writer

The Farmer's Corner, Lubbock, Texas, possibly sells as much fertilizer as any firm in the county—a county which produced nearly 200,000 bales of cotton in 1958.

"Selling fertilizer is about the toughest of all selling jobs," said J. H. Pace, assistant manager. The Farmer's Corner, which is a feed, fertilizer and general farm store, believes in maintaining a profitable margin and is selling more fertilizer than ever before. But it hasn't been easy. The sales have been kept high by giving more customer service.

The firm does no custom application, but gets much of the business by loaning applicators and trailer tanks to farmers. The customer gets free use of the equipment, but he buys the materials from Farmer's Corner.

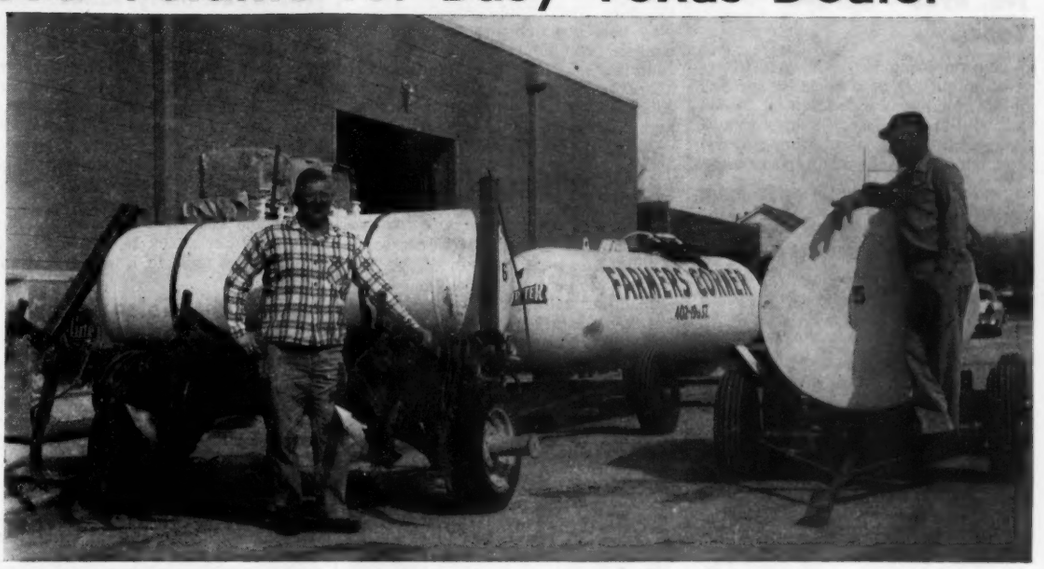
"By doing this we can keep our prices at a normal level," said Mr. Pace. "At present we are getting 7¢ lb. for 82% nitrogen fertilizer and 8¢ lb. for 52% phosphoric acid."

One advantage the store has is that it bought enough tanks and applicators to take care of all the customers. There is a very short waiting period for anyone who wants to borrow the equipment.

Farmer's Corner owns 10 tanks of 1,000 gal. capacity for anhydrous ammonia. These are mounted on trailers. The firm also has nine tanks for hauling phosphoric acid, which hold 500 gal., and they are likewise mounted on trailers.

There are several applicators for loan to customers. These are pulled by tractors and cover three rows at a time. The ones for phosphoric acid are equipped with pump and a 55 gal. tank, while the anhydrous ammonia rigs have 250 gal. tanks.

"All of our equipment represents quite an investment," Mr. Pace said, "as they all are heavy duty units, and they didn't come cheap."



THREE TYPES of rental equipment is maintained at Farmer's Corner, Lubbock, Texas. At left is an applicator to be pulled by the customer's tractor, center is storage tank for anhydrous ammonia, while right is phosphoric acid tank. The applicators are equipped to put out either kind of fertilizer. At right is J. H. Pace, assistant manager.

Along with the tanks and rigs, the store provides several other services. Employees deliver the large tanks and have two pick-up trucks for this use. The small applicators are often carried out by the farmer himself and returned the same way.

"Usually, however, unless the farmer has used the equipment before, we must go out and help get him started," said Mr. Pace. "One of the boys helps the customer get the rig set up. He also regulates the pumps for the proper output of fertilizer, gets on

(Turn to TEXAS DEALER, page 13)

OVER THE COUNTER

By Emmet J. Hoffman
Croplife Marketing Editor

Farm store customers like shopping convenience. According to Mrs. Curtis Keith, co-owner of the Central Feed Store, Groves, Texas:

"We listened to customers remark to us time and again how much they enjoyed shopping at supermarkets. After we investigated, it became apparent it wasn't the prices that attracted customers to supermarkets but the shopping convenience.

"Immediately we decided to try a garden department in our retail farm store, using supermarket methods. All island displays were made 4 ft. high and aisles were made 5 ft. wide to allow ample room for leisurely inspection of merchandise. But we also provide a touch of personal service with self-service.

"This is the way we work it: When customers enter the store and go to the garden department, one of the store personnel tries to call them by name or speak if they are strangers. We invite them to browse and to call out if they need any help. Each time we pass through the department we try and stop a second and show the customers something new that has been recently added. We try hard to make them relax and browse and not feel we are trying to make a sale.

"As an added touch, we try to always take a coke to every customer that is browsing and remark that we don't want to interfere with them but thought they would enjoy some refreshments. Each spring our store purchases over 500 small packets of garden and flower seeds and places them in a box marked free seed and lets each customer make a selection each time he is in the store.

"As an added touch, a box of the free seed is kept at the wrapping table and with each large item purchased in the garden department, a packet of the seed is wrapped in with

(Turn to OVER THE COUNTER, page 15)

Ohio Dealer Makes It Pay . . .

On-the-Farm Selling Can Bring Dividends

For proof that a well planned on-the-farm selling program can pay big dividends, it's only necessary to look at the experience of Everett O. Howell, owner and operator of Main Feed & Supply, Milford, Ohio.

Mr. Howell initiated such a program about a year ago in his store's area. Volume has gradually increased, as the program progressed.

Mr. Howell's territory covers a radius of about 15 miles, and he and his store man, Harold Buckner, between them make from 10 to 15 calls every week.

"Although these visits seem very informal to the farmer, they are all carefully planned," Mr. Howell points out. In his experience, a personal contact program must be well organized and thoughtfully carried out, if bests results are to be obtained from the time spent.

How is this dealer's program set up, and what are the factors in its success? He names the following five points, which he considers most important:

1. We Get Off the Main Roads: To get the maximum business from an area it is necessary to cover that area completely, according to Mr. Howell.

As he puts it, "It isn't just the farmers on the main roads who are prospects for the dealer's products. The farmers who live off the beaten path are also potential buyers, and they are the ones that are most often neglected, when it comes to personal contact."

To make sure no prospects are overlooked, Mr. Howell recommends that the dealer obtain maps of each county covered. "These maps show every road in the area," he says. "By putting them together we made one large map of our territory. We then spotted our farmers on that map, taking the time and gasoline that was necessary to do so. In this way, there's nothing hit or miss about our coverage. We are seeing every farmer in the territory, and thus getting the maximum potential out of the geographical area which we serve."

2. We Use "Door Openers" on the First Visit: Mr. Howell has found that it's a good idea to have something in his hand, when making the first call on a prospective customer. He uses record cards and product literature supplied by his manufacturer, giving the farmer those which apply to the animals he is raising along with a ball point pen, bearing the store name.

"This serves to explain the visit and helps start it off on an easy, smooth fashion," he points out.

3. We Use a Dollars and Cents Approach: This dealer does not consider himself a salesman. Instead, he

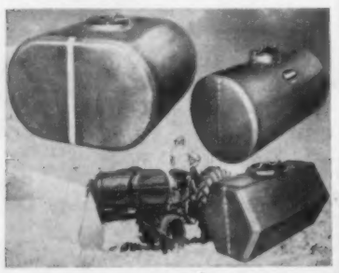
(Turn to ON-THE-FARM, page 11)

WHAT'S NEW IN PRODUCTS · SERVICES · LITERATURE

To obtain more information about items mentioned in this department simply: (1) Clip out the entire coupon in the lower corner of this page. (2) Circle the numbers of the items of which you want more information. Fill in the name and address portions. (3) Fold the coupon double with the return address portion on the outside and fasten the edges with a staple, cellophane tape or glue. (4) Drop in the mail box.

No. 6935—Sprayer Tanks

Hanson Equipment Co. is offering a complete list of Fiberglass sprayer tanks ranging in size from 50 to 500 gal. and in a variety of shapes to suit individual needs. According to the company, the tanks are impervious to



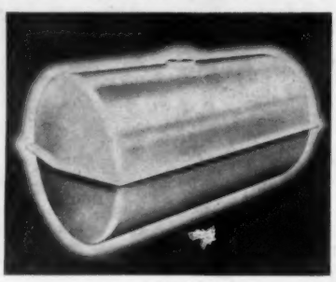
farm chemicals and rust, and will withstand sharp blows without breaking or denting. Translucent tank walls allow the user to view the liquid level at all times. A sight gauge for reference is on either end. Complete information about the tanks can be obtained by checking No. 6935 on the coupon and mailing to this publication.

No. 6939—Display Units

Salesroom wall type merchandisers and gondolas have been announced by Shure Manufacturing Corp. Heavy-duty steel uprights and brackets, available in a number of sizes, are quickly adjustable to meet seasonal requirements, the company said. Wall displays can include lettered plastic valances and large perforated display panels which accommodate numerous combinations of displays. Planning and layout service is available from Shure Manufacturing Corp. to assist in the best utilization of available space. For details check No. 6939 on the coupon and mail.

No. 6937—Molded Tank

A molded fiber glass tank for use in spraying or storing corrosive liquids has been announced by the Molded Fiber Glass Body Co. Designed in a cylindrical shape, the 200-gal. tank is said to resist corrosion and weathering. It is recommended for use as a spray tank for insecti-



cides and liquid fertilizers, or as a storage tank for chemicals. The tank is easy to clean, the company said, and is lightweight and impact resistant. It is 58 in. long with a 32 in. diameter. Available in a selection of colors, the tank is translucent so that the liquid is always visible. For more information check No. 6937 on the coupon and mail to this publication.

No. 6938—Fly Killer

Camp Chemical Co. announced a new Diazinon Fly Bait Killer. In powder form, the product attracts flies and kills them, the company said. It is especially designed for outdoor use. The company guarantees a 98% fly reduction each day of use. The package is ready for use merely by sprinkling on the ground or horizontal surfaces. The packages come 12 to the case. For information on this fly killer check No. 6938 on the coupon and mail to this publication.

No. 6936—Sales Booklet

A brochure entitled "14 Tested Ways to Increase Sales and Cut Sales Cost," has been announced by Perrygraf Corp. Seventy-six pictures and 122 case histories are used to show "how to pep up the whole sales program by using slide-charts to put product facts at the fingertips," company literature said. One slide-chart, distributed by Phillips Petroleum, enables one to see instantly what fer-

14 TESTED WAYS TO BUILD SALES and CUT SALES COST
For the man who wants to guarantee his company's future and his own
Frederick Ferry President
PERRYGRAF CORPORATION

tilizer is needed to replace elements removed from the soil by any one of 30 crops. Other slide-charts show egg cost calculations, feed requirements, how to check rate of fertilizer application, equipment and floor space necessary for different numbers of chickens, dosage for disease prevention and many other farm problems. The booklet and other materials are available free by checking No. 6936 on the coupon and mailing.

Also Available

The following items have appeared in previous issues of Croplife. They are reprinted to help keep dealers on the regional circulation plan informed of "What's New."

No. 6929—Sprayer Spacing Attachment

A device that the manufacturers say is the answer to varying row spacing and needed extra stability for high clearance self-propelled spraying equipment has been announced by Century Engineering Corp. The unit is called the No. CHC-31AT, and is a telescoping device that can be attached to the rear frame of a high clearance carrier to permit the rear wheels to be adjusted anywhere from 72 in. to 150 in. It is available with new equipment or can be added to Century carriers now in the field. With the attachment the equipment can be used on unlevel ground and on seed beds up to 6 ft. wide. For more details check No. 6929 on the coupon and mail.

No. 6928—Heptachlor Selling Course

Velsicol Chemical Corp. is distributing a "Heptachlor Salesman Insect Control Refresher Course." According to the company, the course is designed to educate dealers on the use of insecticides, but is appropriate for formulators and distributors' salesmen. Included in the course are a number of lessons, Heptachlor promotion materials and order form listing all available promotion pieces. Catalog sheet M-51 tells about the Heptachlor dealer "Sales-Builder" program. For details about the course, check No. 6928 on the coupon and mail to this publication.

No. 6927—Orchard Fertilizer Applicator

General Metals, Inc., has announced a new applicator designed especially for appying nitrogen solutions and complete liquid fertilizers to orchards. Trailer Applicator Model 450 consists of a trailer frame, special boom, heavy-duty tank saddles, 235 gal. aluminum or stainless steel tank, Dempster Metering Pump, front end jack and a special shield to stop limbs from getting caught in the applicator and doing damage to the trees. The frame is constructed of heavy 4 in. channel iron and is mounted on 15 in. automotive wheels. The trailer has a front end, top crank jack for positioning the trailer hitch. The pump is driven direct from the ground wheel of the trailer by roller chain. The pump's setting dial can be set at any of 14 positions and adjusted to intermediate positions to give low or high rates of application. Check No. 6927 and mail for details.

No. 6930—Granular Herbicides

Amchem Products, Inc., is offering two new 2,4-D granular herbicides for control of water weeds. Marketed under the trade names "Aqua-Kleer 10" and "Aqua-Kleer 20," the 10 and 20 formulations represent the per cent by weight of 2,4-D acid equivalent. Aqua-Kleer 20 is for bulk use. According to the company, the concept of this control is easier application, slow release of the active ingredient and coordination between the treatment and rapid root growth. Aqua-Kleer 10 comes in 5 lb. canisters and Aqua-Kleer 20 comes in 50-lb. bags. For details check No. 6930 on the coupon and mail.

No. 6932—Nylon Spray Nozzles

A new type of Tee-Jet spray nozzle has been introduced by Spraying Systems Co. which permit the fabricating of a spray boom from an angle-iron instead of piping. The nozzles are mounted in holes drilled in an angle-iron at desired intervals and the hose shanks are connected by hose to make up the complete boom. The nozzles are supplied with double and single hose shank bodies for inside and end positioning on the boom. The complete nozzle consists of hose shank, nozzle body, cap and strainer body made of nylon, with strainer screen in stainless steel and orifice tips in either aluminum or stainless steel. The assembly is held

Send me information on the items marked:

- ☐ No. 6927—Orchard Fertilizer Applicator
- ☐ No. 6928—Heptachlor Selling Course
- ☐ No. 6929—Sprayer Spacing Attachment
- ☐ No. 6930—Granular Herbicides
- ☐ No. 6931—Movie on Urea
- ☐ No. 6932—Nylon Spray Nozzles
- ☐ No. 6933—Fruit Insecticide Folders
- ☐ No. 6934—Lightweight Pallets
- ☐ No. 6935—Sprayer Tanks
- ☐ No. 6936—Sales Booklet
- ☐ No. 6937—Molded Tank
- ☐ No. 6938—Fly Killer
- ☐ No. 6939—Display Units

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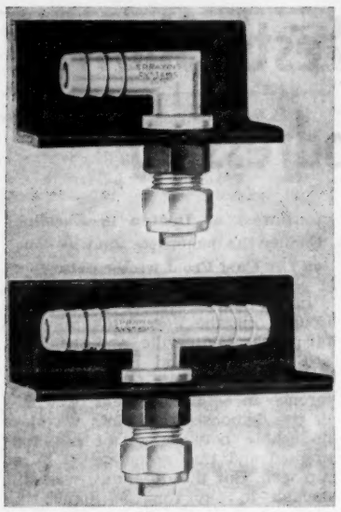

in position on the angle-iron with a lock nut. For details, check No. 6932 and mail.

No. 6934—Lightweight Pallets

Lightweight "Sak-Pak" expendable pallets for use for loading chemicals, lime, fertilizer and other bagged products, have been introduced by Calco Supply Co. The firm has three sizes of pallets available. The pallets are made of corrugated paper reinforced with Kraft veneer board. Each can carry approximately 4,000 lb. and the pallets can be stacked three high. They weigh only 5 lb. each. For details about the product, check No. 6934 on the coupon and mail.

No. 6933—Fruit Insecticide Folders

Two folders which describe use of Sevin insecticide on fruit are now available from Union Carbide Chemicals Co., division of Union Carbide Corp. One folder gives details about application of Sevin on apples, pears and peaches, and the other one covers grapes. Application rates and directions are included. Copies of the folders may be obtained by checking No. 6933 on the coupon and mailing to this publication.

No. 6931—Movie on Urea

"Greener Pastures," an educational movie which stresses the value of urea for supplemental nitrogen applications to increase agricultural yields and efficiency, has been announced by E. I. du Pont de Nemours & Co., Inc. Filmed mainly in the Mid-Atlantic and Midwest states, the 16 m.m. color, sound movie compares old farming methods with those of the modern farmer who employs scientific soil-testing and fertilization. Benefits of pasture-building to dairymen and cattlemen are also cited in illustrations of increased yields resulting from supplemental nitrogen applications. For information on obtaining a print of the film, check No. 6931 on the coupon and mail.

Barley, Wheat, Oats Crops Smaller in California

SACRAMENTO, CAL. — The dry spring will result in harvests smaller than last year for California barley, wheat and oats growers, according to a field crop report of the California Crop and Livestock Reporting Service. It forecasts wheat production at 203,000 tons, 17% below last year; barley production at 1,449,000 tons, 11% down, and oats production at 74,000 tons, 25% down.

Wheat and oats harvest predictions are well below the 10-year averages but the barley forecast is close to the average 1,457,000-ton figure.

ON-THE-FARM

(Continued from page 9)

credits a factual, dollars and cents approach to the farmer with the success he's had in building feed volume.

"We don't try to sell the farmer a product," he says. "We sell him greater net profit. This approach naturally has considerable appeal, for every business man is looking for ways to make more money"

To put over his profit story, Mr. Howell likes to use examples of results obtained by his own customers. He cites specific cases and figures in specific categories. And he either takes the prospect to call on the neighbors whose experience he has cited, or suggests that he telephone them himself.

At the same time, Mr. Howell stresses that an important part of this factual approach lies in backing it up with reasons. "It isn't enough, we've found, to tell the farmer what our program can do for him," he says. "We also have to be able to tell him why it will give him the promised results."

For this reason he feels that any personal contact program must be carried out by personnel who know the product and its chemistry inside and out.

4. We Don't Give Up Too Soon: In this dealer's opinion, one of the biggest causes for failure, in personal contact programs, occurs when the salesman quits too soon.

"Sometimes it may take seven or eight visits before the farmer will agree to try a recommended program," he says. "Unless we have the perseverance and patience to make these call backs we will miss out on the business."

But aren't there some prospective users who are just too small to devote that much time to? And isn't there a possibility of alienating the farmer by persistence?

In Mr. Howell's experience, no farmer's operation is too small to cultivate. "The small operation has a growth potential," he says, "and the small user today, may be an important customer in the future.

"As for alienating farmers by persistence, we are very careful to avoid calling during the farmer's busiest season, except during bad weather; if he is busy when we call, we never linger, unless we can lend a hand with the task he's working at.

"As long as the visit is made in a spirit of friendliness and helpfulness, the dealer will not wear out his welcome. And he will definitely find that patience in making call backs will pay future dividends."

Mr. Howell stresses that it is also good business to get the farmer to come into the store. "When we visit him we invite him to stop in," he declares. "Also, we give a discount on products that are picked up, as another incentive for customers to get in the habit of coming in. It's another form of personal contact which leads to expanded sales, as the farmer sees and inquires about other items to which he's exposed in the store."

That personal contact is paying off for this dealer is evidenced by volume increases. With some department sales up 50%, Mr. Howell is rightly convinced that "you can't run a farm store from the office if you want to get full potential from your area."

CALIFORNIA PUBLICATION

BERKELEY, CAL. — The University of California has published "Subtropical Fruit Pests," a technical survey covering subtropical insects and a guide to control of insect pests on subtropical fruit crops.

Books on Fertilizers And Their Use

FUNDAMENTALS OF SOIL SCIENCE—Third Edition

By C. E. Millar, late Professor Emeritus of Soil Science; L. M. Turk, director; and H. D. Foth, associate professor of soil science, Michigan State University.

This text completely revises and brings up to date the second edition. Special attention is given to progress made in the basic principles of soil science since the publication of its predecessor. This edition includes more emphasis on soil texture and the concept of the texture profile, more discussion of the influence of the soil forming factors on soil development, and more facts about clay minerals to provide a clearer understanding of the differences in the behavior of soils. 496 pages, illustrated. 6x9¼"... **$7.75**

SOIL FERTILITY AND FERTILIZERS (1956)

Samuel L. Tisdale and Werner L. Nelson

An advanced college text, for juniors and seniors, following backgrounding course in soils. Covers elements required in plant nutrition, their role in plant growth, and the soil reactions to these nutrients. Several chapters on manufacture, properties and agronomic value of fertilizers and fertilizer materials. Latter part covers soil fertility evaluation and use of fertilizers in sound management program. 430 pages, cloth bound **$7.75**

PLANT REGULATORS IN AGRICULTURE

Dr. Harold B. Tukey

Published September, 1954. A text book giving background material for county agents, farmers, citrus growers, nurserymen, gardeners; providing fundamentals and general principles; covers encouragement of roots by plant regulators, control of flowering and fruit setting, parthenocarpy, abscission, prevention of preharvest fruit drop, delaying foliation and blossoming, maturing and ripening, inhibition of sprouting and weed control. Brings together specialized knowledge of 17 authorities in the field, with two chapters written by Dr. Tukey, head of department of horticulture at Michigan State College. 269 pages **$6.50**

THE CARE AND FEEDING OF GARDEN PLANTS

Published jointly by the American Society for Horticultural Science and the National Plant Food Institute.

An entirely new, one-of-a-kind book, it is designed to acquaint readers with nutritional deficiency symptoms or "hunger signs" of common yard and garden plants including lawn grasses, shrubs, flowers, garden vegetables, and cane and tree fruits. It stresses plant "feeding," or "what makes plants grow." Sixteen of the nation's leading horticultural authorities collaborated in its preparation. Cloth bound, 300 pages of text and illustrations including 37 pages in full color **$3.00**

AUXINS AND PLANT GROWTH

A. Carl Leopold

A 366-page book, complete with bibliography, appendix, and index, discusses the fundamental and applied aspects of growth hormone and synthetic auxin action in plants. These are of interest to all workers in agricultural chemicals—for weed control, flowering control, fruit set, flower or fruit drop and plant propagation. The text is divided into two sections, (1) fundamentals of auxin action, and (2) auxins in agriculture. These cover developmental effects of auxins, the physiological and anatomical effects of their application, the chemical nature of growth regulators, and methods of applying auxins and their persistence in plants and soils. Other subjects covered: rooting, parthenocarpy, flower and fruit thinning, control of pre-harvest fruit drop, flowering, dormancy and storage, herbicides, miscellaneous uses of auxins, and potentials of auxins and auxin research. Published by University of California Press..... **$5.00**

ECONOMIC AND TECHNICAL ANALYSIS OF FERTILIZER INNOVATIONS AND RESOURCE USE

By E. L. Baum, Earl Heady, John Pesek and Clifford Hildreth.

This book is the outgrowth of seminar sessions sponsored by TVA in 1956. Part I—Physical and Economic Aspects of Water Solubility in Fertilizers. Part II—Examination of Liquid Fertilizers and Related Marketing Problem. Part III— Methodological Procedures in the Study of Agronomic and Economic Efficiency in Rate of Application, Nutrient Ratios and Farm Use of Fertilizers. Part IV—Farm Planning Procedures for Optimum Resource Use. Part V—Agricultural Policy Implications of Technological Change. It presents new methodological techniques for more efficient handling of research problems related to fertilizers and provides more meaningful answers to problems of practical application **$1.95**

HUNGER SIGNS IN CROPS—Second Edition

A symposium—published jointly by the American Society of Agronomy and the National Plant Food Institute.

A comprehensive study of nutrient-deficiency symptoms in crops compiled by 19 of the leading authorities in the field. It is being widely used by college professors, research and extension specialists, industrial chemists and agronomists, county agents and teachers of vocational agriculture. Many farmers have found it of particular value in planning their fertilizer programs. Cloth bound, 390 pages, 242 illustrations, including 124 in full color **$4.50**

USING COMMERCIAL FERTILIZER (1952)

Malcolm H. McVickar

Dr. McVickar is chief agronomist of the National Fertilizer Assn. The book deals specifically with commercial fertilizer, how it is produced and how to use it. It is non-technical. It includes chapters on how to measure fertility of soils, secondary and trade-element plant foods. 208 pages, 106 illustrations, cloth bound..... **$3.50**

COMMERCIAL FERTILIZERS, Their Sources and Use—Fifth Edition (1955)

Gilbeart H. Collings

Based upon the author's practical experience as an experiment station agronomist and teacher, and incorporating information on recent developments by agronomists, chemists, engineers and fertilizer manufacturers. Authoritative on problems concerning commercial fertilizers and their use in gaining larger yields. 160 illustrations, 522 pages **$8.50**

APPROVED PRACTICES IN PASTURE MANAGEMENT (1956)

M. H. McVickar, Ph.D.

Outlines clearly and concisely how to have productive pastures to furnish high-quality forage for livestock, economically and efficiently. Written for grassland farmers. Covers the important activities associated with establishment, management and efficient use of pastures as grazing lands or as a source of fine winter feed for livestock. It is as specific as possible for all U.S. pasture areas. Twenty chapters, 256 pages, illustrated **$3.00**

MANURES AND FERTILIZERS

A survey by the Ministry of Agriculture and Fisheries, dealing with soil analysis, inorganic fertilizers, waste organic substances and principles of manuring. In language to give the farmer basic principles of increasing soil fertility by the application of natural organic manures and synthetic inorganic fertilizers. Many important tables on quantitative data **$2.50**

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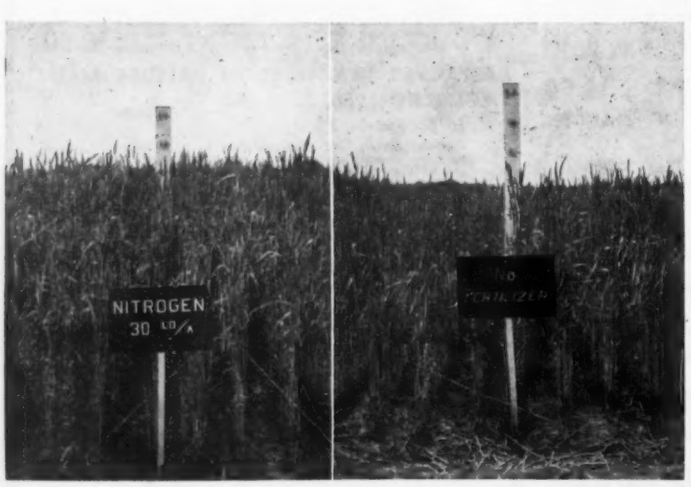
USE OF SPRING topdressing of nitrogen on small grains was demonstrated on farms, this year, in 13 Maryland counties, such as the demonstration shown above. Amounts of nitrogen applied to the plots in the spring are shown on the signs which read, from left to right, zero nitrogen; 15 lb. of nitrogen; 30 lb. of nitrogen; 45 lb. of nitrogen; and 300 lb. of 10-10-10 fertilizer. Note increase in growth from left to right due to nitrogen. Many farmers have visited the plots to observe the test results.

★ ★ ★ ★ ★ ★

PROOF THAT SPRING topdressing of nitrogen on small grains pays off is shown by this close up. Note the height of the barley in inches on the measuring stick. Comparing the effects of no fertilizer and 30 lb. of nitrogen per acre is Dr. James R. Miller, University of Maryland extension soils specialist, left, and Roy Porter, Worcester County assistant agent.

★ ★ ★ ★ ★ ★



RESULTS OF SPRING topdressing of nitrogen on wheat are clearly shown on the measuring stick. Wheat topdressed with 30 lb. of nitrogen is taller and has much more foliage. These plots are representative of the results found in demonstration plots showing the effects of topdressing different levels of nitrogen on small grains. The plots were located on farms in 13 counties in Maryland.

13 Maryland Tests Show Results of Topdressing

Demonstration plots in 13 Maryland counties showed that topdressing small grains with nitrogen in the spring pays in extra yield and extra income.

A swing around Maryland's eastern shore with a stop off at the nitrogen topdressing demonstration plots in each of the eight counties will prove it. In every case, at each of the demonstration plots was borne out the value of the recommendation of the experiment station that small grains will profitably respond to an application of from 20 to 40 lb. of actual nitrogen per acre topdressed in the early spring.

Each of the eight plots presented a neat appearance with their clearly marked signs located on a well traveled road easily accessible to local farmers. The plots were identified as Fertilizers Demonstrations carried out cooperatively by the University of Maryland agronomy department in cooperation with the county extension service and farm cooperator. The National Plant Food Institute helped by providing a grant for the work. All the demonstrations contained five, and some six, different plots marked as to the amount of nitrogen applied per acre. Usual treatment was: no nitrogen; 15 lb. of nitrogen; 30 lb. of nitrogen; 45 lb. of nitrogen; and 300 lb. of 10-10-10 fertilizer.

Winter oats of the Arlington variety were grown on the demonstration plot on the Walter Porter farm near Princess Anne in Somerset County. While visiting there, Dr. James Miller, University of Maryland Extension soils specialist, remarked that the very severe winter had killed off fields of winter oats in the northern counties of Maryland. In Somerset County when the winter was not as severe, the plot treated with 30 lb. of nitrogen was looking much better than the one receiving no topdressing.

Farmers who had a chance to visit the plot of Wong barley on the George W. Clayville farm near Snow Hill in Worcester County saw an approximately 15 bu. estimated yield difference between the no fertilized plot and that topdressed with 30 lb. of nitrogen. At the 45 lb. of nitrogen per acre application the grain was lodged just before harvesting.

In Wicomico County on the Gaither Aydelotte farm near Salisbury the story was the same. The 30 and 45 lb. applications of nitrogen gave a noticeable increase in growth. Here the 45 lb. plot looked very good, proving the lighter soils need a higher application of nitrogen.

The Dorchester County demonstration plot containing Tayland wheat on a farm operated by Eberspacher Brothers near Vienna was described by Fred Eberspacher as "a good example of why a farmer can afford to fertilize—he just can't afford not to." Here, again, the check plot which got no nitrogen, was away behind the plot which got a 30 lb. application in early March.

Moving north up the east shore to the remaining four counties the same results were repeated. Stops were made at the farm operated by Harry Whitby just north of Trappe in Talbot County to measure the growth of plots planted to Thorne wheat. At the Roland Corkell farm southwest of Denton in Caroline County the demonstration was done on Lee Cold Proof winter oats.

In the heavier soils of Queen Annes County on the Joseph Quimby Sr. farm near Centerville, and the Howard Leaverton and Son farm at Chestertown in Kent County, the difference in estimated yield of wheat in the demonstration plots was less noticeable between that not topdressed and that receiving 30 lb. of nitrogen. But the difference was still enough to pay for the application plus a little extra. There was some lodging at the higher rates of nitrogen on the plots in Queen Annes County, bearing out the recommendation that the heavier soils will take only the lower application amounts if lodging is to be avoided in normal years.

Dr. Miller pointed out at the conclusion of the visits to the plots that they all followed rather closely the results obtained in a number of experiments conducted at various locations in the state showing that an increase of 7 to 15 bu. is obtained by topdressing small grains in the spring (in late February or early March) with nitrogen on soils needing such treatments. These experiments showed that the yield of straw is often increased by about a half ton per acre. The additional straw can be sold as a cash crop or used for bedding.

Topdressing with nitrogen is not recommended on fertile soils where lodging is commonly a problem. Also when fields have been heavily manured, or where the grain follows a productive crop of legumes. It is not recommended that nitrogen be topdressed where the legume crop seeded in the small grain is more important than a top grain yield.

On soils where lodging is not a problem, 350 lb. of 4-12-12 should be drilled in at seeding time and then topdressed in the spring with 20 to 40 lb. of actual nitrogen per acre. The higher amount should be used on the lighter, sandy soils which are often low in available nitrogen due to leaching by heavy winter rains.

Where lodging is a problem and where the small grain follows a legume crop, he recommended that 200 lb. of 0-20-20 be drilled in at the time of seeding with no topdressing of nitrogen in the spring.

Most of the nitrogen fertilizers found on the market can be used for topdressing. These include: sulfate of ammonia, urea, ammonium nitrate, nitrate of soda, nitrogen solutions and others.

Dr. Miller pointed out that in cases where no phosphate or potash was applied at the time of planting the small grain, a complete fertilizer, such as 10-10-10 should be used for topdressing. Without adequate phosphate and potash in the soil, he added, maximum returns from the nitrogen that is applied could not be obtained. In a few of the counties visited, this was demonstrated in the small grain plots receiving an application of 10-10-10 which were a bit ahead of the 30 lb. and 45 lb. nitrogen treatments.

When it comes to figuring out how much fertilizer is needed to supply 30 lb. of actual nitrogen per acre, Dr. Miller explained that it will take 190 lb. of nitrate of soda; 150 lb. of sulfate of ammonia; 90 lb. of ammonium nitrate, or about 70 lb. of urea.

TEXAS DEALER

(Continued from page 9)

the tractor and perhaps makes a round or two until he is satisfied the farmer can go it alone. Even then if we have a big job going, we'll manage to drop by and see if everything is all right."

Since liquid fertilizer mixing and output are difficult for an inexperienced person to handle, the store makes sure the customer is protected from his own mistakes. If he gets too much or too little fertilizer on the field, the yields will show the error. And quite often the farmer will blame the dealer who sold him the fertilizer.

"So many products are standardized now," said Mr. Pace, "that hardly anyone can say he is handling a better product than someone else. Anyone can buy the same fertilizer we handle and our solution has been to give more customer service, help farmers with management problems and be available."

Quite often the field men will be required to help measure land or estimate the acres planned for fertilization. The farmer won't know for sure, yet he has planned to spend a certain amount for fertilizer. When this question arises, the service crew will take out a measuring wheel, roll it along one side and an end of the field and rapidly compute the acreage.

This work, however, pays for itself in the sale of the wheels. Farmers see how handy they are and have bought a large number.

Another service provided for customers is soil tests. The field men take soil samples or the owner himself may bring one in. It is then sent to a laboratory in town which analyzes the soil and makes a quick report. The rate is $2 for each sample.

"We encourage soil testing for some fields," said Mr. Pace. "But after a man starts using fertilizer, he can usually determine what plant food is needed by observing the plants. We have done quite a lot of work in helping farmers recognize nutrient deficiencies."

Farmer's Corner really gets busy along in July when the cotton boll worms first appear. Most farmers spray or dust their fields at regular intervals, and it requires a tremendous amount of insecticides. The firm not only sells it to their fertilizer customers but also to many others. Usually there is an agreement with aerial crop dusters who are hired by the store during the growing season.

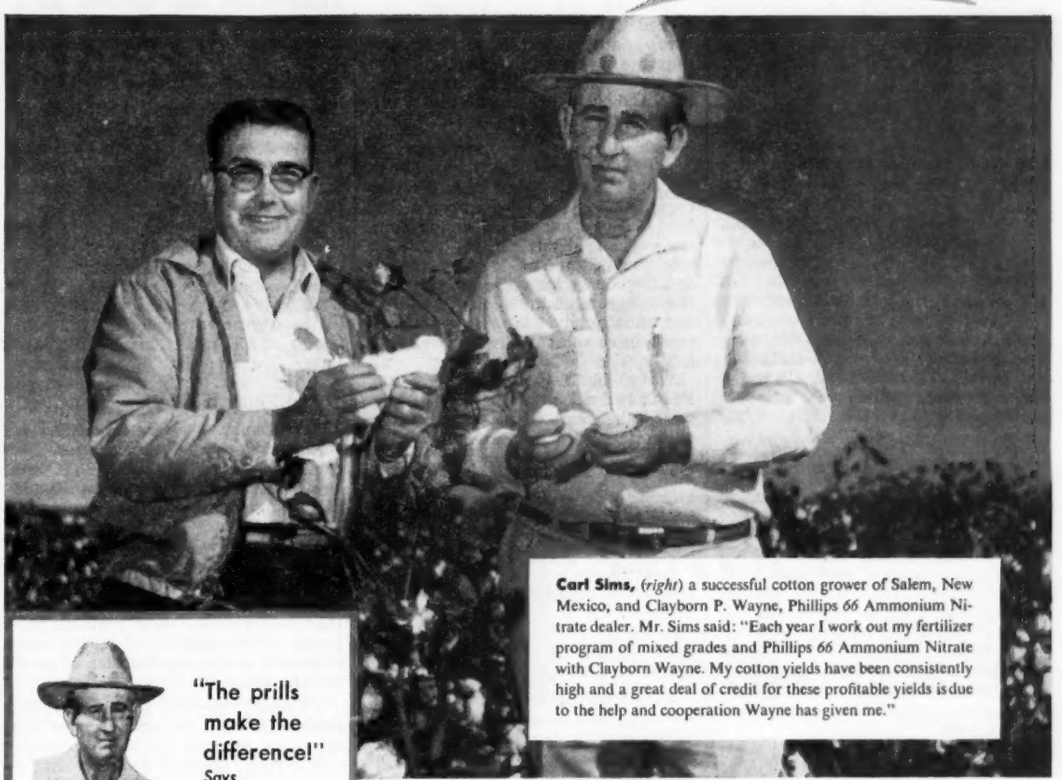
"We find the customers, furnish the materials, then pay the pilot a certain fee per acre," said Mr. Pace. "Since some farmers may use aerial help several times during the year, this is a nice bit of business."

A new but promising field is the spraying of sodium chlorate on Johnson grass. This has long been a southern field pest, but is now succumbing to modern chemicals. In trying to rid their fields of it, farmers are buying large quantities of the sodium chlorate.

Still another profit-making product is the defoliants used to kill cotton leaves during autumn. Farmers have it put on by crop dusters, because plants are too tall and bushy to allow tractors. In defoliation work, Farmer's Corner hires pilots in the same manner they do during the insect season.

"There are many other products sold as a result of our all-out chemical program," said Mr. Pace. "We sell such things as spray equipment, spreaders, irrigation supplies, seed and dozens of other products. And even though the margin on certain farm chemicals is rather thin, we make it back because of the tie-in sale of longer-profit items."

PHILLIPS 66 ads like this appear regularly in CAPPER'S FARMER, PROGRESSIVE FARMER, FARM JOURNAL, FARMER-STOCKMAN and FARM and RANCH . . . part of a continuing program to help dealers sell more mixed fertilizers and PHILLIPS 66 AMMONIUM NITRATE.

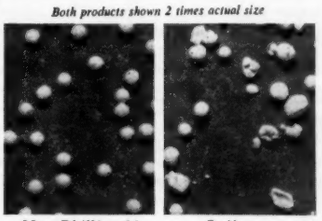


Carl Sims, *(right)* a successful cotton grower of Salem, New Mexico, and Clayborn P. Wayne, Phillips *66* Ammonium Nitrate dealer. Mr. Sims said: "Each year I work out my fertilizer program of mixed grades and Phillips *66* Ammonium Nitrate with Clayborn Wayne. My cotton yields have been consistently high and a great deal of credit for these profitable yields is due to the help and cooperation Wayne has given me."

"The prills make the difference!" *Says Carl Sims.*

"It's mighty reassuring that every bag of Phillips *66* Ammonium Nitrate contains the same uniformly free flowing prills. The prills are always hard, dry and round. Not only does it feed evenly through the applicator, but Phillips Ammonium Nitrate also stores without caking."

Both products shown 2 times actual size



New Phillips 66 Ammonium Nitrate — *Ordinary Ammonium Nitrate*

Proof of the difference is in these unretouched photographs. Thanks to Phillips new and different electronically-controlled process—and polyethylene-lined bags—you get round, hard, dry and uniform prills that *stay that way* in storage and during application. This means uniform distribution for more even feeding and higher yields. It will *pay* you to ask for Phillips *66* Ammonium Nitrate, America's best 33.5% nitrogen fertilizer.

Better product and dealer help give him bigger yields, profits

"Because I always side dress my cotton with nitrogen, I have to use free flowing Phillips *66* Ammonium Nitrate," Mr. Sims said. "Where ordinary nitrate might clog or bridge in the hopper, Phillips *66* Ammonium Nitrate always feeds evenly to prevent costly skips that can't be seen at the time of application.

"My fertilizer program is usually 200 pounds of 16-20-0 and 50 pounds of nitrate side dressed before the first irrigation, followed by 150 pounds of Phillips *66* Ammonium Nitrate side dressed in June. My cotton yields average better than 2 bales per acre."

Like Mr. Sims, other successful farmers find that the combination of Phillips *66* Ammonium Nitrate . . . and friendly assistance from their fertilizer dealer helps them get higher yields, more profit.

See your fertilizer dealer about a *balanced fertilization program* . . . using Phillips *66* Ammonium Nitrate and his high quality mixed grades.

"A good name Phillips 66 *to grow by"*

PHILLIPS PETROLEUM COMPANY. Sales Offices: Amarillo, Tex.—First Nat'l Bank Bldg. • Atlanta, Ga.—1428 West Peachtree Street, Station "C" P. O. Box 7313 • Bartlesville, Okla.—Adams Bldg. • Chicago, Ill.—7 South Dearborn St. • Denver, Colo.—1375 Kearney St. • Des Moines, Iowa—6th Floor, Hubbell Bldg. • Houston, Tex.—6910 Fannin Street • Indianapolis, Ind.—3839 Meadows Drive • Kansas City, Mo.—201 E. Armour Blvd. • Minneapolis, Minn.—215 So. 11th St. • New York, N. Y.—80 Broadway • Omaha, Neb.—3212 Dodge St. • Pasadena, Calif.—317 North Lake Ave. • Raleigh, N. C.—401 Oberlin Road • Salt Lake City, Utah—68 South Main • Spokane, Wash.—521 East Sprague • St. Louis, Mo.—4251 Lindell Blvd. • Tampa, Fla.—3737 Neptune St. • Tulsa, Okla.—1708 Utica Square • Wichita, Kan.—501 KFH Building.

Balanced Skills: Measure of Effective Managers

By EDWARD L. ANTHONY and HARRY DAVID
Management Methods Division
Small Business Administration
Washington, D.C.

What are the characteristics of a successful small retail store manager? To this question, many store owners would like to have a concrete, meaningful answer. Yet again and again countless listings of such characteristics have had two major faults: First, they dealt in abstractions. Second, they failed to take into account the hard fact that managers operate in concrete, social situations—another way of saying that they are human beings dealing with human beings. This Aid tries to approach this practical problem in terms of practical situations which any businessman will readily recognize.

These situations, furthermore, will demonstrate the effectiveness of a manager with balanced skills. These skills belong to the successful manager who must be a confident, determined but thoughtful man of action. Such a man is the ideal manager so eagerly looked for.

After all, anybody who owns his own small business may have to pick an assistant, or may want to look for a successor or "stand-in," who can carry on for him. Thus, the search for the good manager with the characteristics that spell success is no academic, "long-hair" problem. On the contrary, the problem of selecting the **right** man—the man who can foresee, plan, organize and control—is a practical, dollars-and-cents talent search. To see how it all works out in practice, this Aid presents some specific, down-to-earth case histories.

Ralph in Action

This was Jim Patton's experience: Jim hired Ralph Henderson to run Patton's Quality Dresses. At first Jim was happy with his choice: Ralph was a born salesman, and he inspired the employees with his own selling-zest. He also loved to linger over the income figures. But he was no "financier," and so the store's bank balance held little attraction for him; nor the need for repairs which, with the current balance, would have necessitated a bank loan.

Almost impatiently, he brushed aside Jim's mild hints to devote more time to being an executive (two new employees needed supervision), a boss (Jim still had to make decisions on purchases and dress lines), a citizen (be a member of civic organizations.)

Reluctant to take over in the area of management action. Ralph, was even less inclined to pay attention to management thinking. He scarcely even realized the possibilities of being a creator ("I've got to sell, don't I?"), an innovator ("What's wrong with the way things are?"), a planner ("I can't worry about tomorrow"), or a psychologist ("I'm a practical businessman").

Ralph, in effect, stubbornly clung to a narrow conception of managerial functions. That view may have been all right yesterday, but it is out-of-date and perilous to a small store today.

It is in the person of Frank Conroy that you will meet a representative of today's type of successful store manager. Watching him will give you an opportunity to compare his management philosophy and approach with that of Ralph's . . . and the comparison will tell you why Frank is a successful small store manager, and why Ralph is not.

First, meet Frank the Doer. Later on you'll meet Frank the Thinker.

Frank the 'Doer'

A small store manager "wears many hats." He must be salesman, financial "authority," buyer, employee-morale builder. To illustrate this necessary flexibility, without which neither the manager nor his store can be successful, this Aid presents an unusual—but not too unusual—day in the bsiness life of Frank Conroy.

• **"Financier."** On the morning of that day Frank, manager of a food and delicatessen store, had a brief conversation with local banker Ed Meechum. "I've been thinking about painting the store, Ed," he said. "And adding a new neon sign. And I need additional shelves in the store room. I'd like to get a loan. How about it?"

Banker Meechum knew the store, knew its trade, knew it was a going concern. More importantly, he knew Frank Conroy's reputation as a good, hard-working, imaginative businessman. By the time Frank left the bank, he could be certain he would get the money.

• **Buyer:** His next problem concerned the terms of sale and the delivery date on some merchandise; over the phone he dickered with one of his suppliers, with whom he also talked about a list of goods he wanted to order for future delivery.

• **Executive.** After straightening out his merchandise problems, Frank talked to a dissatisfied customer who complained about a dented can of dog food she had puhchased in the store (he exchanged it); then he gave the stockroom clerk a mild—and private—dressing down for neglecting to keep the storage area in "apple-pie" order; and, finally, he interviewed three prospective sales clerks for an opening.

When he returned from lunch, Frank had a look at the books which were taken care of by his part-time accountant. He did a little control work in checking on how his margins held up in comparison to last month and last year. But he soon had to go back on the floor to indorse some personal checks, and even to help his over-worked packers.

A little later, when the stream of customers began to thin, he settled down in his small office to have a look at a booklet describing up-to-date small retail store organization-and-sales methods.

• **Advisor.** By closing time, one of his employees asked Frank for a moment of his time. Frank readily agreed. The man wanted advice about an offer he had had, to manage a small food store. "I'd hate to lose you," Frank assured him, "but it's a step up. Take it."

• **Citizen.** On his way home Frank mentally went over the speech he was going to make before a service organization later that evening. He was aware of the importance of a businessman being a part of community life, and he belonged to several organizations. After a quick dinner with his wife and two children, Frank was on his way again. The speech went over well, and when he returned home about 11 o'clock, he could look back on a busy, satisfying day.

• **Boss.** In fact, of course, Frank's problems never end with the end of the day. He is the boss. And that means that he must forever make decisions and accept responsibility for them. Frank doesn't mind that, and he never puts the blame for his wrong decisions on anyone else's shoulders. That's why he is well-liked—and he knows it. That, too, is why employe morale is good in his store. And he fosters it in any way he can, seeing to it that his staff develops an esprit de corps, a feeling of being "partners" with him in the down-to-earth adventure of running a business.

But running a business demands more than the possession of an aggregate of organizing abilities, as Frank knows only too well. As a small retail store manager he must not only act—he must also think.

Frank: the 'Thinker'

A small store manager must be at home in the areas of long-range planning, innovation, and creativity. The following section of this Aid will show how Frank Conroy performs his functions in the "thought" area.

Two important developments tested Frank's decision-making ability one morning. The first was the news that a competitor was opening up in a nearby location; the second came in the form of a phone call from the owner of his store, during which the latter told him that he had found a "perfect" new location for the store. Would Frank have a look at it?

• **Diplomat.** That same afternoon Frank investigated the location, decided it was desirable, but—. It was this "But" that bothered him. Would his customers—even the steady clientele—"follow" the store? He decided to ask the people whose opinion he was most eager to obtain: the customers. When he reported the result of his informal survey, which showed that better than sixty percent preferred the current location, the owner agreed to give up the idea of moving the store.

• **Creator.** Secure in his physical location, Frank at once turned his attention to the second problem: competition. Quickly deciding that a good offensive was the best defense, he moved to increase his newspaper advertising space somewhat. In addition, he visited the advertising agency, and with the staff's help developed radio copy. And he even worked up a slogan which embodied his own personal merchandising philosophy. This slogan ("I Sell What you Want to Buy") was used in both his newspaper and radio advertising campaigns. Of course, he was certain that customer loyalty was one effective answer to competition, but he refused to count on it as the answer.

• **Innovator.** In keeping with that theory, he initiated a new "Special Delivery" service, designed to speed to customers deliveries of any order exceeding $20, within a five-to-seven hour period. In addition, he inaugurated a "hurry-up" service: With the help of a small utility car purchased for this service, he was able to accommodate customers' frantic last-minute orders. This was designed to help out housewives who found themselves with unexpected guests on their hands, or organizers of on-the-spur-of-the-moment parties.

To make certain that the store retained a "personal" flavor, he picked two of his best employees for a special assignment as order takers. On the phone, they were to use the store name and also their own first names. They were to be "specialists," would know about the prices and availability on any given day of all merchandise in the store. Should even this safety-device fail, and orders for non-available merchandise be accepted by the order takers, a substitute item would be sent to the customer. This was to be accompanied by a red-bordered square piece of paper attached to the item in question, with a message reading: "The item you ordered was not available today. We are sorry to put you to any inconvenience. We have sent along a substitute item. Should you wish to do so, you can return it to us through the delivery boy. The charge will be credited to your account at the store."

Along with his new delivery policy, he also instructed his order takers and his other employees to note down—over a three-month-period—each item asked for, and which was not included in the store's normal inventory. At the end of that time, he had a list of more than a dozen items which he had not previously stocked; those which had been asked for most frequently, he added to his stock.

• **Planner.** About this time, he heard that the store next door was being vacated. For some little while he had dreamed of having a separate Delicatessen Corner. Here was his chance. He called the owner, quickly came to an agreement; they made a deal to move into the additional space. Now he could add more items, include some rarer lines in his stock. (His survey had shown that a sufficiently large number of his customers wanted imported delicacies to make their inclusion in his stock both worthwhile and profitable.)

Of course, even before the merchandise was physically put in, Frank had another meeting with the accountant. They discussed the allocation of appropriate overhead to the new section. And he asked the accountant to set up a method for collecting information on the margin and stock turn of food lines that were to be added. Thus, by the time the Delicatessen Corner opened for business, Frank would be able to keep a periodic check on every item, and know which was profitable and which was not.

• **Improvisor.** Frank wanted people to come—and to enjoy—shopping in the store. To make this possible, he needed no razzle-dazzle public relations program. Instead, he instituted a "Children's Corner." Here, away from exits and traffic, children could read comics or munch on store-provided candy. Meanwhile mom and dad could shop without having to worry about their restless offspring . . . and without having to search the aisles for lost children.

• **Psychologist.** Of course, he also kept in mind that what is good for the employees is in the end good for the store. This line of thinking he followed with a "Merit Only" plan, which gave employees a chance to compete for a once-a-month $10 Employee-Credit-Certificate. The plan worked this way: Each time Frank

SUMMARY

Today's successful small retail store manager must be a many-sided individual. The purpose of this Aid is to show various types of skills he needs to keep his enterprise going against smart, resourceful competition from bigger companies, and to end the year in the black.

Because the manager is the key man in the shop, success or failure of a small concern depends on his ability to cope with a wide variety of tasks which daily confront him. One man who is able to perform all of them well is Frank Conroy, whom you will meet in this Aid. He typifies the effective manager, the man with balanced skills, in contrast to the individual who is interested and competent in only one or two phases of management responsibility.

To his job Frank brings an understanding of and a flair for being a financial manager, buyer, executive, advisor, citizen, and boss. But he is also a diplomat, creator, innovator, planner, improvisor, and psychologist. In other words, he is both a doer and a thinker.

Add up all of his assets—the assets of an effective manager—and these positive traits stand out: leadership, flexibility, self-confidence, vision, and open-mindedness.

Frank is an unusually competent manager. But if he is an ideal manager, he may be an ideal worth imitating. For in today's sharply competitive business climate, more and more owners and managers alike find that to survive, they must be as Frank-like as possible.

noticed an employee treating a customer with special courtesy, he entered a plus mark in a notebook. There were no minus marks. The man or woman credited with the largest amount of plus marks in a given month, earned the right to take home any merchandise up to the value of $10. Frank knew that the plan had paid off, when customers began complimenting him on the excellent service in his store.

Another employee-project that paid off was one he liked to call an informal partnership program. Specifically, he encouraged his staff to make suggestions concerning any phase of the store's operations. Even Frank himself was surprised when this "morale-builder" resulted in many and practical ideas for service and operations improvements.

The Man You Want to Hire

Contrast Frank Conroy—the Doer and Thinker—with Ralph Henderson, whom you met earlier in this Aid, and the choice of candidate for a small retail store manager's job is obvious. Of this Aid's two managers, Frank clearly emerges as the Right Man. Why?

• **The Wrong Man.** It may be useful to compare Ralph's assets with Frank's. A look at Ralph's strong points shows this picture of him as manager:

Sales-ability: Definitely a plus asset in Ralph's case. A good, strong, energetic salesman.

Enthusiasm: Very strong. Certainly a plus asset.

Ambition: Yes . . . But. Ralph's ambition was centered on being a salesman primarily.

Executive Ability: One-directional only. He was able to get the most out of his people . . . where selling was concerned.

These attributes in a manager, while important, simply are not enough.

• **The Right Man.** Frank had all of Ralph's assets, but a lot more besides. His balanced skills made him—and the store—a success. Add them all up, and this is what they mean:

Leadership: The ability to look at the whole picture of a situation, problem, prevailing condition. Make decisions affecting the whole.

Flexibility: Physically, the ability to take on several jobs and carry them through. Mentally, a person's ability to adapt himself to new situations, to adjust himself to new conditions (competition).

Self-Confidence: A trust in one's own ability to do a job, meet a situation (store location), handle people (customer and employee programs).

Vision: The imagination to recognize opportunities and the courage to seize them (store and merchandise additions).

Open-Mindedness: The ability to see new possibilities, to make changes (special delivery service) but not for change's sake alone (refusal to relocate store).

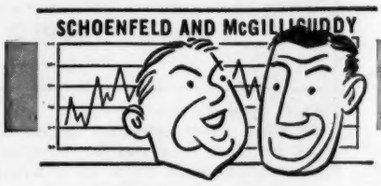
OVER THE COUNTER

(Continued from page 9)

the purchase. A choice of the flower or garden seed is often made according to what the customer purchased.

"We are well pleased with our customers' comments about the free seed we wrap in with their order. We try to limit our free items. We don't want to be known as a give-away store but we find that a few extras can be rewarding.

"We find that most customers appreciate our desire to give them a nice place to shop. We find they don't feel out of place even with everyday work clothes because we cater to everyone. Our garden department has really reached out and brought the customers in because we tried to offer them a little something extra."



OSCAR & PAT

By AL P. NELSON

A chunky woman, wearing a light weight coat and red scarf entered the Schoenfeld & McGillicuddy farm supply store and made her way to the many islands loaded with farm, garden and lawn merchandise. She would pick up one item after another, look at it and then consult a list which she carried in one hand.

Oscar Schoenfeld, balding, pot bellied, figuring discounts glanced at the woman two or three times, a suspicious look in his eyes. He was always looking for pilferers, among other things, and suddenly the woman saw him looking at her.

"I'm just browsing," she said. "I just want to get some flower seeds and a few other things. My husband will be in and pick me up as soon as he is through over at the bank."

Oscar gratefully went back to his figuring, but still taking time off now and then to watch the woman. Now, he saw her coming down the aisle toward the wrap counter in the office area. Under one arm she carried a rake, under the other a hoe. The fingers of her left hand clutched a stack of flower seed packages and the other had a couple of cans of insecticide and some garden sticks.

With a beaming smile she laid the objects down on the wrap counter. "You certainly have a lot of nice garden things here," she said. "I sorta got carried away—but we need all these things. I'm Mrs. Frank Vollmer on Rt. 4. We took over the old Hartwell place. The house and yard is awfully run down. All last year's weeds are still in the garden, too. I'll have plenty of work there all summer."

Oscar grunted and started totalling up the items the woman bought.

"Wait a minute," she said. "This is only my first load. I need some other things. I want an itemized bill. My hubby needs that for his income tax." She laughed. "Uncle Sammy, you know. He wants it all down on paper."

Frowning, Oscar watched her go back and start picking out more items. He hoped she was a cash customer. In fact, he would not sell her these items, if she wanted credit. He never gave anyone credit without a thorough investigation.

Tillie came over to him and whispered. "Hey, our sales will go way up today. Man, is she buying. I peeked out the window. She's driving a 1958 car. Maybe she's got money."

By the time the lady got through shopping she had added to the items already on the wrap desk an egg basket, some flower bulbs, a hand sprayer, quack grass killer, weed killer, lawn seed, fork, lawn fertilizer, sprayer, two bird houses, a bird feeder, a garden cart and two bags of garden fertilizer.

"I think we could use that five dozen egg cleaner, but I'd better ask my husband about that," she smiled engagingly. "You know how men are. Please total the bill so it'll be ready when my husband comes. He hates to wait."

"Cash?" Oscar asked coldly.

"Why, I suppose so, if you want it that way," the farm woman said. "We've got a bank account."

So Oscar started totalling the items. He filled one invoice sheet and began another. He was just ready to add the whole deal when the woman came up quickly, "Oh, put this plastic dishpan, and these pliers, this outhouse lime and a hammer with the rest of the items. I guess that'll about do it."

Oscar had to go to the third invoice sheet and was ready to total the purchases on the adding machine. Just then a tall, sour faced, grey-eyed farmer in slouch hat and worn overalls came in.

"Ready to go home, Grace?" he snapped.

"Well, just about Frank. I—I've got a few things here we need. Want to pay for them with a check?"

The farmer stood stock still and his lips tightened. "Is that mess of stuff yours?"

The wife nodded. "Y-yes, Frank."

"Put it back, feller," he said to Oscar. "We don't want any of it."

Oscar blinked. "Ach, you don't want any of it. After she said she wanted it, and I totalled it all up for her. What kind of business is this?"

"It's my business!" snapped the farmer. "I've got to watch her all the time. She's one of those women that goes crazy when she gets into a store—any kind of a store. She can't stop trying to buy everything in the place."

"But, Frank," wailed his wife, "I need these things for my garden."

"Garden? Listen, woman, you won't have any time to garden on that place we rented. You'll be busy riding tractor for me, cultivatin', strippin' cows after milking, spreadin' manure and lots of other things. Think I wanta hire a man to do this work while you putter in a garden raisin' a few radishes with $300 worth of equipment and supplies?"

"But—"

"You leave the thinkin' in this family to me," her husband snapped. "I been doin' all right at it so far."

"Y- yes, dear."

Frank Vollmer turned to Oscar, fury in his face. "And you—you oughta be ashamed of yourself, you highbinder, high-pressuring my wife into buying all this stuff she don't need."

"High pressure?" snapped Oscar. "She picked it oudt herself — all of it."

Vollmer's eyes narrowed. "That's what you say. That's a salesman's way. Always it's the customer who picks it out. But you're needling customers into buying more than they need. I know your kind, you—you spender! You spend like a drunken sailor yourself, and try to get others to spend the same way."

"Spender?" cried Oscar shaken to the roots by this terrible accusation.

"Yeah, spender." Vollmer's eyes flashed fire. "Well, we are not spending here. Take all that stuff and put it back on the selves. No. I'll take that bag of outhouse lime. We need that. Terrible how some folks leave a farm premises nowadays when they move off." He slapped down a dollar ten on the counter.

"Let's get on home, Grace!" he snapped. "I've warned you about guys like this. When will you learn?"

FARM SERVICE DATA

EXTENSION SERVICE REPORTS

Fertilizer placement definitely influences corn stands, according to results of experiments conducted by the agronomy department at Virginia Polytechnic Institute.

Large amounts of nitrogen and potash when in contact with seeds were found to be harmful to stands, especially where rainfall was scanty during the germination period. Slight injury was apparent when phosphate was applied alone in contact with seeds. It was noted that phosphate alone in the row gave greater early growth.

Three main types of fertilizer placement were used in tests conducted by J. A. Lutz, assistant agronomist and assisting field station personnel. They were broadcast, contact in the row, and band placement. In the band placement method, fertilizer was placed 2 in. to the side and 2 in. below the seed. Combinations of these three methods were also tested.

Fertilizer spread at rates up to 1,000 lb. per acre of a 10-10-10 were not harmful to stands when the broadcast or band placement methods were used. It was only when large amounts of nutrients were placed in the row with the seed grain that injury occurred.

Tests were conducted in 1958 at Orange and Warsaw. This year they were being held at VPI and Petersburg in addition to the two original test sites. Yield data will be gathered in the fall.

The tests are expected to run for four or five years in an attempt to develop more information on this problem.

★

Evidence that corn needs nitrogen is the yellowing of the leaves from the tips through the midrib.

According to J. C. Lowery, Alabama extension agronomist, about 2 lb. of nitrogen should be added for each bushel of corn over and above the amount the soil will produce without adding it. A 50 bu. crop of corn requires 83 lb. of nitrogen, along with 29 lb. of phosphate and 45 lb. of potash.

A light green color of the leaves is the first sign of nitrogen starvation. However, when this occurs, the corn is past the stage when nitrogen should have been applied. To prevent poor yields later, corn on poor soils should be supplied with a basic application of nitrogen, phosphate and potash at planting time. When the corn is about 30 days old, Mr. Lowery recommends applying 40 to 75 lb. of actual nitrogen as side-dressing.

In recent years good results have been obtained from both nitrogen and mixed fertilizer in several thousand demonstrations conducted by county agents in Alabama, says the specialist. When the farmers used 60 to 90 lb. of nitrogen along with correct rates of phosphate and potash, the yields were close to 60 bu. Where 80 to 100 or more pounds of nitrogen and recommended phosphate and potash were used, yields of 80 to over 100 bu. per acre were made.

WEED OF THE WEEK

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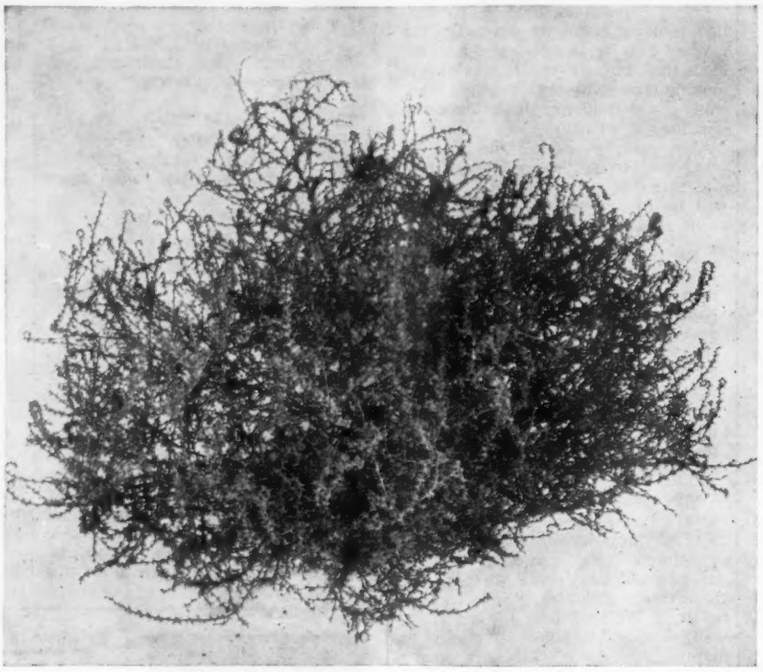

Russian Thistle

General Appearance

Russian Thistle, otherwise known as "Russian cactus" and "tumbleweed," is found largely in the Great Plains states. In the fall of the year, the plants may be about 30 inches tall, with numerous branches arranged so that the general shape is somewhat spherical.

Growth of Thistle

Germination of the seed seems to occur normally early in spring, with seedlings appearing around April 30 (in North Dakota). Under favorable conditions, germination may continue later in the season, with seedlings having appeared as late as the middle of June. Early leaves become quite long, but the later ones are somewhat shorter. By the first of June, the normal plants in the open are about 4 in. tall and the lowest branches have just begun to develop. In later growth and maturity, the lower branches spread out nearly horizontally, or are bent somewhat downward to rest on the ground. Terminal portions rise as much as is permitted by the mass of upper branches. The lower secondary branches often become nearly as large as the main stem and usually are somewhat longer. The very lowest branches, however, may be dwarfed, presumably due to shading by the upper branches.

Propagation

The Russian thistle is an annual plant, reproducing by seeds on both cultivated land and waste places, chiefly in dry regions of the U.S. and Canada. Although early leaves of the plant are succulent, later ones are stiff and end in spines. Late in the season, the whole plant becomes hard and woody, breaks loose from the soil, and is blown about as a "tumbleweed." This action scatters its seeds over a broad area.

Losses from Thistle

The chief economic loss charged to these plants lies in their use of moisture which could better be utilized in producing crops. The thistle also causes nuisance damage to fence rows and to fences themselves by piling up against them. The most effective manner of control, according to experiment stations in the states where the weed occurs, is through cultural means.

*Illustration of Russian Thistle through courtesy of U.S. Department of Agriculture, Beltsville, Md.

GEORGIA SURVEY

(Continued from page 1)

the importance of corn and pastures to the Georgia fertilizer industry as a market for their product. In recent years the increased use of fertilizer on pastures has resulted in an extension of the fertilizer season. This has meant a more even distribution of fertilizer sales throughout the calendar year.

Potential Increased Use

It is a well known fact that Georgia farmers are not using adequate amounts of nitrogen, phosphorus and potassium for optimum per acre yields. How much additional fertilizer is needed and what crops offer the greatest potential for increased use?

★ ★ ★

1958 NITROGEN USE

Crop	Per cent of total
Cotton	7.6
Corn	47.5
Oats	3.0
Wheat	1.1
Tobacco	1.0
Soybeans	0.3
Peanuts	1.4
Permanent Pasture	16.3
Temporary Pasture	18.8
Truck Crops	3.0

(Compiled from summary of Georgia county agents 1958 estimate of fertilizer use.)

1958 P_2O_5 USE

Crop	Per cent of total
Cotton	8.5
Corn	42.1
Oats	2.7
Wheat	1.0
Tobacco	2.9
Soybeans	1.0
Peanuts	4.8
Permanent Pasture	15.8
Temporary Pasture	17.1
Truck Crops	4.2

(Compiled from summary of Georgia county agents 1958 estimate of fertilizer use.)

1958 K_2O USE

Crop	Per cent of total
Cotton	9.2
Corn	41.5
Oats	2.6
Wheat	1.0
Tobacco	3.1
Soybeans	1.0
Peanuts	4.7
Permanent Pasture	15.5
Temporary Pasture	16.7
Truck Crops	4.7

(Compiled from summary of Georgia county agents 1958 estimate of fertilizer use.)

1958 NITROGEN, P_2O_5 AND K_2O USE

Crop	Per cent of total
Cotton	8.4
Corn	43.7
Oats	2.7
Wheat	1.0
Tobacco	2.3
Soybeans	0.8
Peanuts	3.6
Permanent Pasture	15.9
Temporary Pasture	17.6
Truck Crops	4.0

(Compiled from summary of Georgia county agents 1958 estimate of fertilizer use.)

POTENTIAL INCREASED NITROGEN USE

Crop	Per cent of use	Tons
Cotton	2.2	3,810
Corn	36.8	63,709
Oats	2.2	3,726
Wheat	0.2	426
Tobacco	0	—266
Soybeans	0.3	450
Peanuts	1.8	3,090
Permanent Pasture	46.5	80,696
Temporary Pasture	9.7	16,765
Truck Crops	0.3	572
Total		173,244

POTENTIAL INCREASED P_2O_5 USE

Crop	Per cent of use	Tons
Cotton	0	0
Corn	18.9	10,844
Oats	5.8	3,312
Wheat	0.8	462
Tobacco	0	—798
Soybeans	1.1	630
Peanuts	6.7	3,863
Permanent Pasture	63.4	36,408
Temporary Pasture	3.2	1,812
Truck Crops	0.1	52
Total		57,383

POTENTIAL INCREASED K_2O USE

Crop	Per cent of use	Tons
Cotton	2.6	2,752
Corn	24.4	24,399
Oats	4.7	4,692
Wheat	0.8	817
Tobacco	0.8	770
Soybeans	1.1	1,080
Peanuts	9.0	9,013
Permanent Pasture	49.6	49,728
Temporary Pasture	6.3	6,353
Truck Crops	0.7	624
Total		100,228

POTENTIAL INCREASED NITROGEN, P_2O_5 AND K_2O USE

Crop	Per cent of use	Tons
Cotton	2.0	6,382
Corn	29.9	98,852
Oats	3.5	11,730
Wheat	0.5	1,705
Tobacco	0.3	770
Soybeans	0.7	2,160
Peanuts	4.8	15,966
Permanent Pasture	50.4	166,832
Temporary Pasture	7.5	24,930
Truck Crops	0.4	1,248
Total		330,675

In an attempt to answer these questions, estimates were made on the potential increased fertilizer nutrient needs above what is currently being used by Georgia farmers. These estimates are based on an average fertility level of medium phosphorus and low potassium for south Georgia and medium phosphorus and medium potassium for north Georgia soils. The amounts of nitrogen, P_2O_5, and K_2O needed were based on soil test recommendations for the crops listed and fertility levels previously quoted.

Based upon the 1958 acreages of the crops listed, these estimates indicated that there is a potential in Georgia for use of an additional 173,444 tons of nitrogen, 57,383 tons of P_2O_5 and 100,048 tons of K_2O.

Cotton and tobacco offer the smallest potential for increased fertilizer use. In fact, Georgia farmers, on the average, are using slightly more nitrogen and phosphorus than recommended for tobacco. On cotton, farmers are currently using as much phosphorus as recommended but less nitrogen and potassium.

Corn and pastures offer the greatest potential for increased fertilizer use. These two crops, which occupy the greater part of Georgia's cultivated acreage, are relatively poorly fertilized. Together they account for 86% of the potential for increased fertilizer use on crops in Georgia.

Even though Georgia farmers are doing a better job in fertilizing corn and pastures, convincing them that it pays to use recommended amounts of fertilizer on these two crops, remains a tremendous educational task. Georgia's per acre corn yield increased to an all-time high of 32 bu. in the year 1958. However, this yield is still too low for profitable corn production. Research has proved and demonstrations have shown that an average yield of 60 bu. of corn can be made on any of the major soils of Georgia, provided adequate fertilization and other recommended cultural practices are followed.

Pasture fertilization has increased in recent years resulting in an increased animal unit carrying capacity per acre. However, a tremendous educational job must be done in the years ahead to convince farmers that adequate fertilization of pastures is profitable. For example, research has proved that on Coastal Bermuda, per acre beef gains can be increased from 256 lb. with 50 lb. nitrogen to 620 lb. with 200 lb. of nitrogen. Yet, on an average, farmers are using only about 25 lb. of nitrogen per acre on Coastal Bermuda.

Insecticide Sales Rise in Alabama

DECATUR, ALA.—The sale of insecticides in north Alabama and the south half of Tennessee is up by as much as 30% from 1958, according to Clem Noblitt, plant manager of the California Spray-Chemical Corp. of Decatur.

"There has been a tremendous increase in sales in all parts of our area," he said. "Not only has this been in field insecticides but in the small-packaged garden products as well."

Mr. Noblitt attributes this to two things: farmers are planting more row crops and vegetables, and city residents are increasingly growing more shrubbery, grass and gardens.

"Our most troublesome insects are found on cotton and corn," he explained, "and this alone has caused larger sales. But we are also finding that hundreds of people have put in gardens, possibly for a hobby and for beating down the high cost of food."

CHUCK PAINTER (left), soils extension specialist, and F. Todd Tremblay, regional director of the National Plant Food Institute, inspect a field of alfalfa in Idaho on their soil-analysis and plant-analysis survey recently completed. The NPFI cooperated with the Idaho extension service in making the survey. About 120 samples equivalent to approximately 8,000 acres were taken just prior to the first cutting of alfalfa. The purpose of the survey is to determine the plant food levels present in both the alfalfa and soil samples, and to determine the nutrients limiting growth in the fields not producing maximum yields. The plant samples will be analyzed for protein, phosphorus, potash, calcium and boron. The soil samples will receive a routine soil test at the University of Idaho. The farmers who had their fields sampled will be advised of the nutrient status of their fields upon completion of the analyses and appropriate recommendations will be made if the fields are low.

Construction Started On USDA Laboratory

WASHINGTON — Construction began June 15 on the U.S. Department of Agriculture's new north-central field research laboratory near Delaware, Ohio. The laboratory will facilitate research on diseases and breeding of ornamentals, shrubs and forest and shade trees.

The laboratory, which will be completed next spring, will house scientists of the ornamental plants section of the Agricultural Research Service's Crops Research Division now located at Columbus, Ohio, and personnel of USDA's Forest Service.

Construction is being financed by a $350,000 fund appropriated specifically for the project last year by the 86th Congress. The proposed site—part of a 160-acre experimental tract to be used as an outdoor laboratory in conjunction with the new building—is near the Delaware, Ohio, flood control dam.

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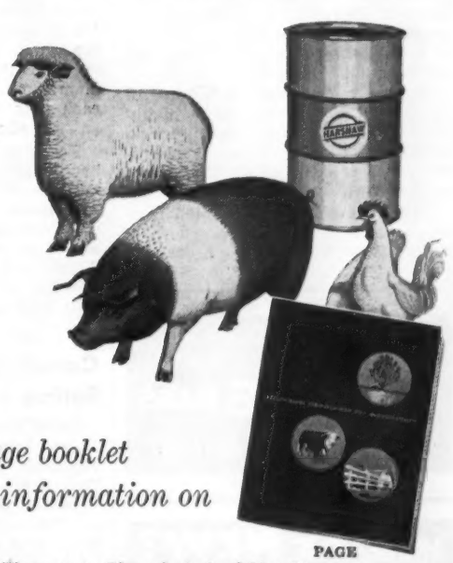

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Variety of Insects, Controls Discussed At Pacific Entomological Society Meeting

SACRAMENTO—Male chicks, now destroyed by hatcheries, are being studied as a method of eliminating flies, a University of California scientist told the Pacific Branch of the Entomological Society of America in annual convention here.

John L. Rodriguez, staff member at the University of California Riverside campus, said that the traditionally despised cockerels should be kept to consume fly larvae. Tests conducted by him at Riverside showed the male chicks consumed large amounts of the larvae.

Louis A. Riehl, associate entomologist at the Riverside campus, told the 300 entomologists from the western states that the northern fowl mite and chicken body louse can be controlled at a fourth of the normal expense by spot treatments with a new pesticide called Co-Ral in dust or liquid mixtures. Use of the new preparation, he said, must await approval by U.S. Food and Drug authorities.

W. Harry Lange, Jr., entomologist from the University of California Davis campus, said careful selection of sugar beet planting dates in certain areas may help keep down infestations of virus yellows spread by the green peach aphid.

Flight peaks into the field, Mr. Lange said, occur in the Salinas Valley from March to June and August to December. In Kern County the greatest numbers of aphids fly into the fields from March to April and in Yolo County the peak is from March to June.

Barry Tarshis, an associate professor at the University of California, Los Angeles, told the group of a new compound with which he has obtained excellent results in paralyzing cockroaches. The potent powder is a mixture of Dri-Die 67 and an insecticide, Dibrom which has been treated with ammonium fluosilicate to give the compound a strong positive charge to make it cling to cockroaches.

Prof. Tarshis sa'd the compound also has been found extremely effective on dog and cat fleas, bedbugs and heavy mite infestations on reptiles.

Silica gel dust applied with a fire extinguisher was found by Robert E. Wagner, University of California research worker from Los Angeles, to be a safe, permanent control for bee and wasp infestations.

Seeking a bee and wasp control that would not involve use of highly toxic chemicals with short or no residual effect, Mr. Wagner tried several kinds of dusts which kill insects by dehydrating them.

Two such dusts, Silikil A and Horticultural Dust 91, were found especially effective even at low dosages, Mr. Wagner said, when applied with a fire extinguisher. The researcher explained that the carbon dioxide in the fire extinguisher forces the silica dust into the hive. A two-second blast of 4 to 8 oz. per hive provides virtually perfect control, he said. In addition, the carbon dioxide slows the bees sufficiently to permit the operator to work safely.

The three-day meeting closed with the selection of Spokane, Wash., for the 1960 convention in June and the election of officers.

H. C. Manis of the University of Idaho, is the new chairman. Converse H. York of the Shell Chemical Co., Los Angeles, is the new chairman-elect; Cornelius B. Philip of the U.S. Public Health Service Rocky Mountain Laboratory in Montana, representative to the governing board; Hartford H. Keifer, California State Department of Agriculture, Sacramento, reelected secretary-treasurer, and Robert W. Harper, chief, Bureau of Entomology, California Department of Agriculture, Sacramento and George F. Knowlton, Utah State College, executive committeemen.

Georgia Contest Winners Also Top Fertilizer Users

COVINGTON, GA. — A. C. Ewing and sons, Morton and Charles of Newton County, Georgia, who were first place winners in the 1959 Georgia Grazing System and Feed Production program, made generous use of fertilizers to get the most of grazing from their pastures.

J. R. Johnson, agricultural extension service agronomist, said the Ewings competed with 420 other Georgia farmers in the contest, which is sponsored by the Georgia Plant Food Educational Society, and conducted by the extension service annually.

The Ewings operate a 200-acre dairy farm of high-yielding pasture and crops and are milking about 37 Jersey cows. They have a variety of good pastures for feeding Jersey cows, and for use of the dry cows and heifers.

Mr. Ewing said he and his sons apply 500 lb. of 4-12-12 fertilizer and 100 lb. ammonium nitrate per acre to rye grass, Dallis and Bermuda combination. They use 300 lb. per acre of ammonium nitrate upon the fescue each year. They also lime the fescue pasture about every three years.

For winter pasture the Ewing farm has 32 acres—eight in oats, 12 in a mixture of rye, rye grass, and crimson clover, and 12 in oats, rye grass, and crimson clover. These fields were seeded in the fall and fertilized with 800 lb. of 4-12-12 to the acre, and top dressed with 82 lb. of nitrogen in split applications.

Cornell Horticulturist Retires as Department Head

GENEVA, N.Y.—Prof. Charles B. Sayre, head of the department of vegetable crops at Cornell's New York State Experiment Station here since the department was organized in 1928, retired July 1. The board of trustees of Cornell University recently named him emeritus professor.

Prof. Sayre was appointed associate horticulturist at the station in 1925, and in 1928 was promoted to professor and head of the newly formed department of vegetable crops. He has made numerous contributions to cultural and fertilizer practices now followed widely in the production of vegetable crops grown for processing in this state and is the author of a number of experiment station bulletins and technical and popular articles on the subject.

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Everett C. Horne G. W. Kraemer

IMC Announces New Department's Sales Lineup

SKOKIE, ILL.—International Minerals & Chemical Corp. announced details of the sales organization for the basic materials department of its new agricultural chemicals division. The division combines the former phosphate and potash divisions in a major realignment.

George J. Urbanis

Everett C. Horne is sales manager of the basic materials department, reporting to Leonard W. Gopp, vice president in charge of sales for the division.

Mr. Horne came to IMC earlier this year after nine years in managerial posts with Bradley & Baker, the last five as general manager in charge of fertilizer sales, with headquarters in New York City.

The sales staff, which will handle the full line of IMC fertilizer ingredients, will consist of five regional managers under Mr. Horne, supported by 12 district managers.

Regional managers are Fred C. Broadway, Atlanta; George J. Urbanis, Indianapolis; G. W. Kraemer, Minneapolis; Jack K. Lindsey, Shreveport; and William W. Chadwick, New York.

District managers are Gaines Boynton, Walton Dennis, Milton Malone, James Baskin, and Judson Drewry in the Atlanta region; Thomas Bruns and H. Clair Dyer, Indianapolis; Richard Falck and William Lane, Minneapolis; Harold Hoffman, Shreveport; and Robert Heuerman and Basil Surgent, New York.

Indianapolis and Minneapolis are new regional offices formerly served from IMC's Skokie, Ill., headquarters.

Fertilizer Meetings

ATLANTA, GA.—The Georgia Plant Food Educational Society, Inc., has announced a series of summer meetings designed to show farmers the effects of good fertilizer practices.

Placement of Fertilizer Important Factor in Getting Optimum Results

WASHINGTON — "Proper placement of fertilizer is beginning to rank with proper amounts in the minds of today's farmers," Werner L. Nelson, Midwest Director of the American Potash Institute, told a meeting of the American Society of Agricultural Engineers on the campus of Cornell University June 23.

Speaking on principles of fertilizer placement before a special program of the Society's Joint Power and Machinery Division and the National Joint Committee on Fertilizer Application, Dr. Nelson reported that many agronomists believe improper placement has been limiting fertilizer use.

He listed two main objectives of safe, efficient fertilizer placement: "(1) to avoid injury to seedlings, (2) to provide efficient use of nutrients from start to maturity."

Dr. Nelson's talk was based on the American Potash Institute's new slide set on fertilizer placement, a set of 40 colored slides, accompanied by script for educational use.

"Many factors are involved in good fertilizer placement," the Midwest scientist explained, "including the crop, the nutrient, the moisture level, and the soil."

He told the group there are "many possible times to apply fertilizer but band placement plus broadcast equals a fast start plus continued nutrition."

Other features on the special program included: "Fertilizer Placement for Small Grains," by C. M. Hansen and L. S. Robertson of Michigan State and R. F. Dudley of USDA, Beltsville, Md.; "Deep Tillage and Fertilizer Placement" by C. E. Rice, R. H. Driftmier, L. T. Wansley of University of Georgia and C. M. Hansen, L. S. Robertson and H. D. Foth of Michigan State.

"Physical Removal of Radioactive Surface Contamination from Agricultural Land—Progress Report" by R. C. Menzel, Paul E. James, USDA, Beltsville, Md., and "The Need of Precision Agricultural Equipment for the Canning Industry" by C. H. Mahoney, director of raw products research bureau, National Canners Assn., Washington, D.C.

ROOT-KNOT REPORT

UNIVERSITY PARK, N.M.—Experiments on selection of nematocides and methods of application for cotton root-knot control in New Mexico are described in a research report just issued by New Mexico State University Agricultural Experiment Station. The report was prepared by Donald J. Morton, former assistant nematologist at the experiment station.

DISCUSSING 1960 plans for the plant food industry at the recent National Plant Food Institute meeting at the Greenbrier in White Sulphur Springs, W.Va. were: (left to right) J. D. Stewart, newly-elected NPFI president; Richard E. Bennett, former president and now chairman of the board, and Dr. Russell Coleman, and Paul T. Truitt, executive vice presidents.

Gibberellic Experiments With Beans Surprise Colorado Growers

OLATHE, COLO.—Strictly as an experiment, Chet Torrey and his nephew, Dick Brown, used gibberellic acid on eight bags of beans. To their surprise, treated beans towered 12 to 14 in. in height within 10 to 12 days, as compared to 3 in. for untreated beans.

Treated beans made most of their growth in the length of stem between nodes, since leaves have formed in the same number as untreated beans, noted William R. Culbertson, county agent.

Mr. Torrey and Mr. Brown plan to set aside 16 rows of treated bean plants for additional fertilization to determine the effect of a combined stimulant and extra nourishment program.

Similar tests with gibberellic acid treatments of potatoes and other crops are contemplated by the Olathe Potato Growers, said Bob Hill, manager.

Chemical Brush Control Increases in Louisiana

MONROE, LA.—Chemical control of undesirable trees and underbrush is increasing in northeastern Louisiana, as paper and lumber companies are using this method to facilitate the cutting of pine and other softwoods. Most of the companies buy the power equipment and do their own spraying.

Good results are being achieved with 2,4-D and 2,4,5-T, according to H. R. Kelly with the Forest Chemical & Supply Co., whose firm handles power sprayers and chemical products.

"It's the cheapest and quickest method," he said. "By killing off the worthless trees and brush, the pines will grow more rapidly."

Another trend in this area is sterilizing the soil around large warehouses and other industrial sites. This prevents grass from causing a fire hazard, and gives the owners a lower fire insurance rate. Most of this work is done by independent contractors.

Oregon Crops Specialist Retires After 40 Years

CORVALLIS, ORE.—E. R. Jackman, one of Oregon's foremost agricultural leaders, retired June 30 after nearly 40 years with Oregon State College extension service.

As OSC extension farm crops specialist, Mr. Jackman started many of Oregon's major agricultural advances. He personified the "field worker" extension specialist, taking his teachings out to farm meetings and tours, visiting remote farms and crossroads throughout Oregon.

He joined Oregon extension service in 1920 and has been most closely identified with the state's grassland and wheat programs. He helped develop Oregon's multi-million dollar grass seed industry, promoted facelifting of eastern Oregon's rangelands through sagebrush removal and seeding of grasses and grazing alfalfas, and has been a strong advocate of pasture improvement programs throughout Oregon.

LARGE PEPPERMINT ACREAGE

PORTLAND, ORE. — Acreage of peppermint for oil in Oregon estimated at 14,900 acres is the largest of record since 1952, according to Oregon Crop Reporting Service. Plantings in Jefferson County are expected to be up sharply from a year earlier while a decrease is expected in most other areas. The U.S. peppermint acreage, estimated at 40,800 acres, is 4% less than last year and 6% below average. Larger acreages in Washington, Oregon and Wisconsin are more than offset by substantial decreases in Indiana and Michigan.

International Paper Announces Reorganization

NEW YORK—A reorganization of the manufacturing department of the Bagpak division, International Paper Co., to provide increased plant efficiency and better customer service, was announced by A. A. Scholl, general manager.

Three divisional staff members have been appointed who will report directly to C. B. McCord, manager of manufacturing, located in Camden, Ark. Production managers have also been appointed for the company's multiwall bag operations.

Mr. Scholl announced that A. S. Morgan was named division production manager; A. R. Davis, division engineer, and H. C. Roper, division director of industrial relations. All three will have their headquarters in Camden.

Production managers appointed were: E. R. Fogle, Camden; J. A. Horne, Mobile, Ala.; W. M. Cathey, San Jose, Cal., and A. C. Kuehn, Litchfield, Ill. All are veterans of more than 25 years service with the company.

Grass, Insects Worry Mississippi Cotton Farmers

JACKSON, MISS.—A combination of grass and insects is causing concern among the state's cotton farmers. The crop is growing well, according to Si Corley, agriculture commissioner, but the fields are very weedy and farmers are having difficulty getting laborers to hoe it.

Insects are appearing in many areas, thus necessitating the need for early control. Both the boll weevil and boll worm are active.

In the Starkville area tarnished plant bugs seem to be doing more damage than other insects, although authorities say that in most cases one application of recommended poisons would control the bugs.

Western States Quarantine Unfumigated Idaho Cherries

BOISE, IDAHO—Cherries from Idaho have been quarantined from entering California, Utah and parts of Montana unless they have been fumigated, under the supervision of the Department of Agriculture.

Cherries are under quarantine restriction in the Montana counties of Flathead, Missoula and Ravalli.

The department said it cannot sign fumigation certificates on individual packages of cherries bound for shipment to quarantine areas by parcel post or auto.

PEACH BORER FOLDER

GENEVA, N.Y.—Control of peach tree borers is described in a folder available from Cornell's New York State Experiment Station at Geneva. The most important sprays for the control of these pests are made during July and August when egg laying is at a peak.

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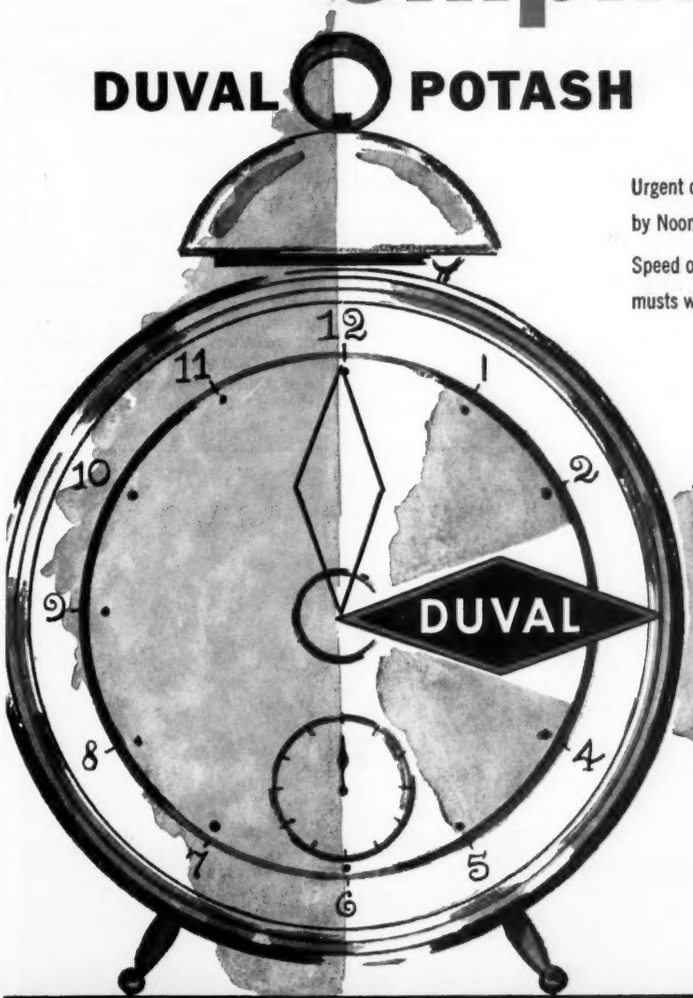

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USDA Reports on Plant Regulators

WASHINGTON—Three plant-growth regulating compounds that will exude from the roots of treated plants into surrounding soil in quantities sufficient to be reabsorbed by nearby plants have been reported by the U.S. Department of Agriculture.

This discovery, arising from basic research on the movement of chemicals within plants, gives scientists of USDA's Agricultural Research Service hope of finding similar substances with plant pest control potential. If a chemical that will protect plants against diseases, insects or nematodes could be mobile within plants like these substances, farmers would have an important new weapon in their fight against pests, USDA said.

The recently tested substances—meta-chloro, meta-fluoro, and para-fluoro—are halogenated forms of alpha methoxyphenylacetic acid (MOPA), reported in 1955 by the department as a promising "systemic," with unusual ability to be moved or translocated throughout the plant. Like MOPA, the three chemically-related forms can not only be translocated but can also be exuded from plant roots in their original chemical form.

Another systemic form of MOPA called mandelic acid was found to have no growth-modifying effect. And, although mandelic acid cannot be exuded from roots, this indicates to scientists that the characteristic of a compound to be translocated can be independent of any property it may have to modify plant growth. Thus, it may be possible to develop systemic chemicals of many different kinds to serve a variety of purposes.

Basic research leading to these discoveries is being conducted by scientists in the Growth Regulator and Antibiotic Laboratory at the Plant Industry Station, Beltsville, Md.

In much of the research, ARS scientists have used radioactive tracers in the systemics to track the movement of the compounds through plants. In addition, the analytical technique known as chromatography —in which various compounds are separated one from another on treated paper by a flow of an organic solvent such as alcohol—has made it possible to identify the form or presence of a chemical at particular locations within plants.

Baugh & Sons Purchases I. P. Thomas Division Of Dixon Chemical

BLOOMFIELD, N.J.—Baugh & Sons Co., Baltimore, has purchased the inventories and tradenames of the I. P. Thomas Division of Dixon Chemical Industries, Inc., Bloomfield. Land and manufacturing facilities were not included in the purchase.

Dixon bought the Thomas Division from Pennsalt Chemicals Corp. in 1958 for approximately $1,500,000. A Dixon spokesman said that his firm found the manufacture of fertilizer incompatible with plans for expansion into the heavy and fine chemicals field.

Mississippi to Get Insect Laboratory

STATE COLLEGE, MISS.—Mississippi State University has received word from Sen. John Stennis (D., Miss.) that construction of a regional insect laboratory will be started in the next few months. The new laboratory was made possible when Senate and House conferees on the agricultural appropriations bill approved Sen. Stennis' amendment providing $1,100,000 for the laboratory. Sen. Stennis said the laboratory will be the insect control center for the entire cotton belt.

USDA CHARTS CATALOGUED

WASHINGTON—A broad selection of charts illustrating trends in the farm economy, rural life and food consumption and nutrition is presented in "Catalog of Selected Charts Available from U.S.D.A.," a publication issued by the U.S. Department of Agriculture.

The 55-page bulletin contains reproductions of 572 charts and maps. Charts included in the publication were chosen because they are suitable for general purposes and are of continuing usefulness. Photographic prints, positive photostats or individual slides of charts shown in the catalog can be ordered from the department.

Kentucky Fertilizer Meeting Plans Told

LEXINGTON, KY.—Program plans were announced for the annual Kentucky Fertilizer Conference, to be held at the Guignol Theater, University of Kentucky, July 29.

Highlights of the conference include discussions on "Pasture Management," by T. H. Taylor, crops agronomist; "Pasture Fertilization," by E. C. Doll, soils agronomist; "Extension Pasture Program," by Warren Thompson, extension pasture specialist; "Organization of the Kentucky Industry-College Fertilizer Advisory Committee," with Bruce Poundstone acting as chairman; "Business Can be Fun," by Penrose T. Ecton, president and general manager, Ecton Supply Co., Lexington; "Activities of the NPFI as They Affect Kentucky," by Zenas Beers, midwest director of the National Plant Food Institute; "Fertilizer Problems of Horticultural Crops," by G. W. Schneider, head, horticulture department, and "Kentucky Fertilizer Grade List," by H. F. Miller, agronomy extension specialist.

The movie, "Cash in on Grass," produced by NPFI, will be shown.

G. T. Webster, head of the department of agronomy, University of Kentucky, will preside.

Anhydrous Capacity Is 5 Million Tons

WASHINGTON—Current anhydrous ammonia capacity is slightly more than 5,000,000 tons, equivalent to approximately 4,150,000 tons of nitrogen, the Business and Defense Services Administration, U.S. Department of Commerce, reports in the new issue of its publication, Chemical and Rubber.

Two new anhydrous plants started production the first of this year bringing the total number in the U.S., including one in Puerto Rico, to 57. Current ammonia capacity is 6% above that at the beginning of 1958.

The department said that production of 3,832,000 tons in 1958 indicates that the industry operated at about 76% of capacity. The average operating rate was somewhat better, however, as some of the new facilities came late in the year, and the shutdown of the leased government plant at Morgantown, W. Va., balanced out much of the increase.

Four more new ammonia facilities are under construction or in the planning stage, and expansion of several existing plants has been announced. These projects, scheduled for completion this year or next, will account for 200,000 tons of ammonia capacity.

Monthly Lime Report Issued by USDI

WASHINGTON—Domestic sales of open-market lime in April increased from the previous month's output, according to reports by producers to the Bureau of Mines, U.S. Department of the Interior.

Sales of agricultural quicklime amounted to 8,308 short tons, and of agricultural hydrated lime, 15,579 short tons.

New Distributor

CEDAR RAPIDS, IOWA—Truck Equipment Co., Ft. Smith, Ark., is a new distributor for Highway Equipment Co., Cedar Rapids. They will handle "New Leader" lime spreaders, combination lime and fertilizer spreaders, widespread lime and fertilizer spreaders, and mobile blenders.

Truck Equipment Co. serves the state of Arkansas. Address of the new distributor is 409 N. "B" St., Ft. Smith.

THE OLD AND THE NEW—A "whirlybird" fitted with hoppers for dispensing agricultural chemicals—fertilizers, insecticides, pesticides, herbicides—hovers with precision control over a tractor and broadcast-spreader during a demonstration at the northeastern meeting, American Society of Agronomy, at the University of Delaware. Some 135 agronomists from 13 states saw the 'copter easily and quickly spread "NuGreen" fertilizer compound (urea-nitrogen) on a pasture and "Dybar" fenuron weed and brush killer on a hedgerow. The whirlybird, which can stand still, flit up, down, forward, sideways and even backward, can cover about 40 acres per hour. The pilot of the helicopter is Charles Mark of Agrotors, Inc., Gettysburg, Pa., and the tractor operator is Frank Springer, Jr., member of the University 's agronomy department, host for the meeting.

INSECTS

(Continued from page 1)

evolution—did the giraffe, for instance, develop a long neck by continually stretching to reach food in trees or did giraffes with the longer necks survive to reproduce other long-necked giraffes because they could reach the food?

The answer is the same as Dr. Crow's conclusion on DDT resistance —long-necked giraffes already in the population were able to find food more readily than the short-necked ones, so they were favored in the fight for survival and lived to breed a race of long-necked giraffes.

Furthermore, Dr. Crow says, there's little hope that a resistant insect population will shift back to susceptibility very rapidly.

Resistant fruit flies that have lived without exposure to DDT for three years—roughly 100 generations—are still about as resistant as they were right after the DDT treatments which brought about the resistance, Dr. Crow says.

Dr. Crow developed resistant strains or families of fruit flies by raising them in contact with increasing amounts of DDT. After six months of this—about 15 generations of flies—a DDT dosage which would kill almost all the flies in original population would kill only half the flies of the resistant strain. After three years of continued exposure to DDT, this same dose killed only five per cent of the resistant flies.

Working with these resistant fruit flies, Dr. Crow obtained several different indications of how the resistance came about.

The most decisive evidence comes from the fact that one of the research group, C. J. Bennett, was able to develop a highly resistant strain of fruit flies whose direct ancestors had never been exposed to DDT.

He did this by selecting brothers and sisters of flies which lived through a heavy dose of the poison. Then he raised a generation from them without treatment of DDT. Then he treated some, again selected brothers and sisters of flies most resistant to the treatment (but not themselves exposed to the poison), and raised another generation.

After a few generations of this indirect selection, these flies had developed resistance to the poison, but none of their direct ancestors had come into contact with it.

Other evidence comes from experiments with highly inbred strains of flies, where there was little variation in DDT-resistance. Little or no resistance developed in these, Dr. Crow found, because resistance was either already as concentrated as it could get in the population or the genes for resistance were not present to be selected for.

To rule out the possibility that resistance was caused by a non-genetic change, Dr. Crow treated fruit fly larvae with doses of DDT which weren't strong enough to kill but which, presumably, would cause the adults to be more resistant to the poison if the poison itself actually caused an individual insect to become resistant.

Since this treatment didn't change the adults' resistance, Dr. Crow concluded that resistance is inherited.

Dempster Products Buys All Habco Capital Stock

BEATRICE, NEB.—Dempster Products Co., Beatrice, wholly-owned subsidiary of Dempster Mill Manufacturing Co., has purchased the capital stock of the Habco Manufacturing Co., Columbus, Neb.

Production of Habco crop dryers and other Habco products will be continued and expanded under the new ownership, according to Clyde B. Dempster, president.

MEETING

(Continued from page 1)

trogen, phosphorus and potassium. Research workers are trying to find a compound that is relatively low in water solubility, that will vary in availability with particle size. Ideally, the carrier would be slowly available during the early growth of the plant and become more rapidly available during the period of rapid growth.

Other advantages of this type of carrier would be fall application with assurance of less loss, Dr. Stanford said. These processes are now possible but they are yet to be achieved on an economical scale of production.

Dr. Stanford reported that fused potassium phosphates with low potassium solubility may become important sooner. The possibility of a low soluble single potassium source is very remote, he concluded.

L. T. Kurtz, professor of soil fertility, reported on trends on fertilizers sold in Illinois. He pointed out that during the past 20 years Illinois has developed from a minor position in fertilizer use to the fourth ranking state in total nitrogen, available phosphate and potash. When the phosphate in rock phosphate is added in, Illinois ranks first in total plant food nutrients, Mr. Kurtz said.

The total amount of fertilizers sold in Illinois in 1958 added up to 1,442,883 tons. This consisted of 544,592 tons of mixed fertilizers, 387,005 tons of fertilizer materials, 510,002 tons of rock phosphate and 1,284 tons of colloidal phosphate.

Over the past four years the rate of increase in soluble fertilizer nutrients in materials used has been greater than in mixed fertilizers. The percent of nutrients sold in mixed form has dropped from 75% in 1950 to 62% in 1955 and 56% in 1958. The most popular ratio of mixed fertilizer is 1-4-4, next is 1-1-1. The 1-4-2 ratio is replacing part of the 1-4-4.

Samuel R. Aldrich, professor of soils extension, reported that Illinois has 80 county soil testing laboratories and 44 independent laboratories. Together they test from 500 000 to 660,000 samples each year. These samples represent about two million acres—nearly 10% of the harvested cropland in Illinois.

Mr. Aldrich reported that the soil testing program is under continuous review and several improvements are contemplated. These include a new test for lime requirement, a study of field sampling, the addition of Dr. R. H. Bray's P_1 test for readily available phosphorus and perhaps better moisture control in the samples for the potassium test.

The P_2 test now used in county laboratories measures the phosphorus in rock phosphate and less available forms. Additional research is in progress to refine the calibration of the soil test for crop responses when fertilizer is applied.

Russell T. Odell, professor of soil physics, reported that two years ago Illinois pioneered in developing "Production Potentials" for the major Illinois field crops on many of the important soils. Through the cooperation of the midwest office of the National Plant Food Institute, wall charts and check lists were widely distributed to fertilizer dealers, rural bankers, county farm advisers, and vocational agriculture teachers.

Mr. Odell described the research data and farm records that were studied to develop realistic production goals for important soils. He indicated that depth of crop rooting and moisture holding capacity are two important factors which determine potential yields on a field.

Mr. Odell said that the soils that have the highest yield potential under good management and fertility systems are the well drained silt loams because of their ease of working, deep rooting zone and large water supplying capacity. When research has shown the way to better crop varieties, fertilizer treatments and other crop and soil management systems, the production potentials will be raised to new levels.

Mr. Odell explained that the "production potentials" are not the highest yields that can be grown on a particular soil. Rather, they are the long term averages that can be expected with good management. Farmers should expect top yields at least 20% higher in the best years, he concluded.

During the second day session, the group discussed fertilizer recommendations for Illinois. Eight smaller groups were given the opportunity to comment on such phases of the program as sources of data for recommendations, bulk application, role of the county farm adviser, build-up vs. liberal crop fertilization and a fertilizer program for wheat. The comments received by the Illinois agronomists are being summarized and will be sent to all participants.

During an informal session, the Illinois Fertilizer Assn. was formed. Robert Weis, Virginia-Carolina Chemical Co., East St. Louis, was elected president.

ROCKEFELLER GRANT

CLEMSON, S.C.—The Rockefeller Foundation has awarded a $3,500 grant to Dr. Edwin W. King of the Clemson Entomology and Zoology Department. The grant will be used to purchase weather-recording equipment for use in a study dealing with the effects of weather on the activity and population levels of insects. Dr. King says the new equipment will aid in gathering basic data on weather patterns as they are related to the activity of insects. He says this type of research may eventually make it possible for entomologists to predict outbreaks of harmful insects.

Delaware Chemical Employment Gains

WILMINGTON, DEL.—A gain of 100 workers in chemical manufacturing in Delaware was reported during May. The employment level was estimated at 25,900, compared to 25,800 in April, according to the monthly report of the Delaware Unemployment Compensation Commission.

The employment figure for May a year ago was 26,800. Average weekly earnings, $3.03 in May and $3.04 in April. The work week remained at the same level, 41.0 hours.

FIELD DAY SCHEDULED

PORTLAND, ORE.—The Red Hills Experiment Station, near Oregon City, will hold a field day July 15 at 1 p.m. Included will be a tour of the experiment station.

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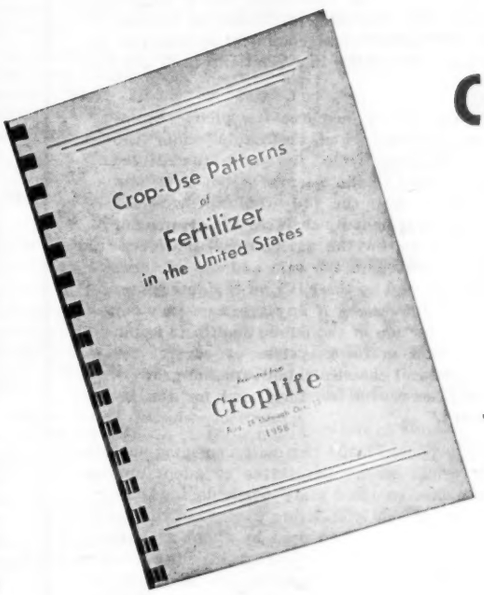

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Need Pointed Out for Uniform State Laws To Make Best Use of Federal Legislation

ALTHOUGH THE INDUSTRY has heard about proposed bills to bring nematocides, defoliants, desiccants and plant regulators under the coverage of the Federal Insecticide, Fungicide, and Rodenticide Act, a background discussion recently given by Joseph A. Noone, technical adviser of the National Agricultural Chemicals Assn. puts the situation in better focus than before. Mr. Noone, speaking in June at the seventeenth annual convention of the Association of Southern Feed and Fertilizer Control Officials at Hot Springs, Ark., outlined some of the reasons for the bill and its provisions.

He reminded that the original Act was passed in 1910 and covered only insecticides and fungicides, but the present federal law was enacted in 1947 to reflect the then current situation as regards pest control chemicals and agricultural practices. It covers insecticides, fungicides, herbicides and rodenticides which are collectively referred to in the Act as "economic poisons" and commonly known as "pesticides."

"Since 1947," Mr. Noone told the group, "several new types of agricultural chemicals have been developed and have found widespread commercial application. These products are generally referred to and are designated in the bills as nematocides, defoliants, desiccants, and plant regulators.

"It is standard practice to regulate products sold to farmers and growers. When these agricultural chemicals began to find widespread use, the question began to develop of how to regulate them and under which laws. Nematocides posed very little problem since they could be regulated under the federal and state pesticide laws merely by the issuance of a regulation declaring them pests.

"Defoliants and desiccants were put under the pesticide laws in a few states by the addition of some extra provisions, but this was not always done in a satisfactory manner from a technical or legal standpoint. The advent of plant growth regulants, particularly the gibberellins, threatened to precipitate a regulatory crisis. Some states began to regulate them under the fertilizer laws, some under their pesticide laws, and a few others under special laws.

"This situation obviously was not to the best interests of the growers, regulatory officials, or the industry. The varying and conflicting requirements of these laws prevented any uniform labeling, marketing, or regulatory practices. The free flow of these products to farmers, growers, and others was being impeded. Industry found it difficult and, in some instances, impossible to comply with all the laws."

This of course underlined the fact that these products should be regulated under an amended and expanded pesticide law rather than under other types of laws.

"Experience has shown that regulation of agricultural chemicals under the federal and state acts has been effective and beneficial to farmers and growers," Mr. Noone explained. Accordingly, it appeared desirable that the same type of regulation, under the same acts, should be applied to these more recently-developed products. This is particularly important since a certain chemical may find use as a pesticide and also as a defoliant, desiccant and/or plant regulator. The herbicide 2,4-D is an example . . ."

Mr. Noone recalled how the various groups of control officials for pesticides and fertilizers had appointed a joint committee to review the situation. Recomm lations made by the committee indicated that any regulatory control over chemicals intended to affect the physiological processes of plants, such as gibberellins, plant regulators, desiccants and defoliants, other than plant foods, should come under the state insecticide, fungicide and rodenticide act rather than under state fertilizer laws.

This brought about a resolution that the association should recommend and endorse the expansion of the existing federal Act to perpetuate uniformity between the scope of that law and the related state statutes and, further, that the association would support and cooperate in the broadening of the federal Act by amendment or otherwise to include chemicals intended for use as nematocides, desiccants, defoliants and plant regulators.

The bill, Mr. Noone said, "would directly subject the products involved to the same labeling, registration and regulatory controls under the Federal Insecticide Act as now apply to agricultural chemicals used for pest control purposes. By placing them under that Act, the bill would also effectively . . . place them under the Miller Pesticide Chemicals Amendment, insofar as residues in or on raw agricultural commodities may be involved, because of the interrelationship of the two acts.

"By placing nematocides, plant regulators, defoliants and desiccants under the Federal Insecticide Act and the Miller amendment to the Federal Food, Drug and Cosmetic Act, the bill would provide for export judgment by the U.S. Department of Agriculture on the agricultural considerations involved in the sale and use of these products and by the FDA on the determination of tolerances, if any are necessary for the protection of the public health. It would provide a uniform system of control for agricultural chemicals, both for the growers and others who use them and for the industry."

The proposed legislation will also set a pattern which would enable the states to adopt similar amendments to their state pesticide laws. Many states are presently awaiting passage of this legislation so it may be adopted by them as part of a uniform state legislative program. Once a state decides that these products should be regulated, its laws regarding control should follow the pattern of this legislation rather than the adoption of some other kind which would complicate the over-all picture.

Not only control officials, but industry people in the various states where legislation is yet to be considered, should support uniform laws. An explanatory word from people in the trade should be appreciated by lawmakers, most of whom will lend an attentive ear to persons who can give them some facts about how important this matter is, and the desirability of making laws as uniform as possible.

New Memorial Scholarship

A FITTING GESTURE has been made by Geigy Agricultural Chemicals, Division of Geigy Chemical Corp. toward a scholarship fund at Purdue University as a memorial to C. C. Alexander who was research manager of Geigy before his untimely death in an airplane accident in May.

Dr. George R. Ferguson, president of the firm, has announced that the scholarship idea was initiated at the suggestion of many friends of Alex both within the chemical industry and outside its scope. The fund will be the first perpetual one of its kind at Purdue which gives preference to entomology students. Since Mr. Alexander was an alumnus of Purdue (class of 1938) this seems particularly appropriate.

Contributions may be made directly to the C. C. Alexander Memorial Scholarship Fund, Purdue Alumni Scholarship Foundation, Lafayette, Ind.

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Nov. 30-Dec. 4—27th Exposition of Chemical Industries, New York Coliseum, New York City.

Dec. 8-10—Joint Meeting of Western Canadian and North Central Weed Control Conferences, Winnipeg, Manitoba.

Meeting Memos listed above are being listed in this department this week for the first time.

July 15-16—Annual Fertilizer Conference, Cornell University, Ithaca, N.Y.

July 15-17—Southwestern Fertilizer & Grade Meeting, Galvez Hotel, Galveston, Texas.

July 29—Annual Kentucky Fertilizer Conference, Guignol Theater, University of Kentucky campus, Lexington, Ky.

July 31—Agronomy Field Day, University of California, Davis, Cal.

Aug. 3-7—Gordon Research Conference on biochemistry in agriculture, Kimball Union Academy, Meriden, N.H.

Aug. 12-13 — Northeast Fertilizer Safety School, Cornell University, Ithaca, N.Y.

Aug. 18-19—Midwest Fertilizer Safety School, National Safety Council Headquarters, Chicago, Ill.

Aug. 18-19—Annual Alabama Fertilizer Conference, Alabama Polytechnic Institute, Auburn, Ala.

Aug. 18-22—Annual Convention of the Canadian Fertilizer Assn., Bigwin Inn, Lake of Bays, Ontario.

Aug. 26-28—Soil Conservation Society of America, 14th Annual Meeting, Rapid City, S.D.

Aug. 30-Sept. 3—American Institute of Biological Sciences annual meeting, Pennsylvania State University, University Park, Pa.

Sept. 24-25 — Annual North-Eastern Fertilizer Conference, NPFI, Biltmore Hotel, New York, N.Y.

Sept. 30-Oct. 1—Fourth Southeastern Fertilizer Conference, Atlanta Biltmore Hotel, Atlanta, Ga.

Oct. 13-14—Western Agricultural Chemicals Assn., fall meeting, Villa Motel, San Mateo, Cal., C. O. Barnard, executive secretary.

Oct. 14-16—Pacific Northwest Plant Food Assn. Annual Convention, Chinook Hotel, Yakima, Wash.

Oct. 21-23 — National Agricultural Chemicals Assn., 26th annual meeting, French Lick-Sheraton Hotel, French Lick, Ind., Lea S. Hitchner, executive secretary.

Oct. 27—Seventh Annual Grassland Farming Conference, Extension Service, Rutgers University College of Agriculture, New Brunswick, N.J.

Nov. 4-6—Fertilizer Industry Round Table, Mayflower Hotel, Washington, D.C. Dr. Vincent Sauchelli, National Plant Food Institute, chairman.

Nov. 8-10—National Fertilizer Solutions Assn., Annual Convention, Statler Hilton Hotel, St. Louis; Muriel F. Collie, 2217 Tribune Tower, Chicago 11, executive secretary.

Nov. 9-11 — California Fertilizer Assn., 36th annual convention, Fairmont Hotel, San Francisco.

Nov. 16-20 — National Aviation Trades Assn., 20th annual convention, New Orleans, La.

Nov. 30-Dec. 5—Joint meeting, Entomological Society of Ontario; Entomological Society of Canada and Entomological Society of America, Hotel Sheraton-Cadillac, Detroit, Mich.

Dec. 7-10—Central Canada and North Central Weed Control Conferences, Royal Alexandra Hotel, Winnipeg, Manitoba, Can.

Dec. 9-11—International Crop Protection and Pest Control Exhibition, Seymour Hall, St. Marylebone, London, England.

1960

Jan. 6-8—14th Annual Meeting, Northeastern Weed Control Conference, Hotel New Yorker, New York City.

CALENDAR FOR 1959-60

JULY

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Croplife

. . . Want Ads

BRUSH AND WEED KILLER—KILL SUBMERSED water weeds which foul up motor propellers, tangle fishing gear and choke irrigation ditches with R-H Granular Weed Rhap. Inexpensive, easy to use, sure results. For details write Reasor-Hill Corporation, Box 36CL, Jacksonville, Ark.

KILL BRUSH at low cost with amazing R-H Brush Rhap. Will not injure grasses, grains, cattle, or other animals. See your dealer, or write Reasor-Hill Corporation, Box 36CL, Jacksonville, Ark.

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Classified advertisements accepted until Tuesday each week for the issue of the following Monday.

Rates: 15c per word; minimum charge $2.25. Situations wanted, 10c a word; $1.50 minimum. Count six words of signature, whether for direct reply or keyed care this office. If advertisement is keyed, care of this office, 20c per insertion additional charged for forwarding replies. Commercial advertising not accepted in classified advertising department. Advertisements of new machinery, products and services accepted for insertion at minimum rate of $10 per column inch.

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FOR SALE—SERIES 80600 E UNION SPEcial sewing machine, complete with adjustable sewing pedestal, adjustable sewing conveyor, driven by 1½ H.P., 220-volt General Electric motor. Used only in feed, excellent condition. Will sell reasonable. Contact: C. Roy Curtis & Son, Inc., Marion, N. Y.

HELP WANTED

SUPERVISORS FOR SHIFT SUPERVISION in dry fertilizer section of an integrated fertilizer plant located in Central California near medium sized city. Experience in wet-process phosphoric acid and pelleted ammo-phos based fertilizers essential. Will consider top operators with good education, background and experience. Send full details first time including salary requirements, present salary and availability. Address Ad No. 4975, Croplife, Minneapolis 40, Minn.

CROPLIFE Want Ads Get Results

HELP WANTED

FERTILIZER PLANT WORKING FOREman take full charge small plant, control of production, mixing, shipping, etc.; complete plant maintenance. Salary commensurate with experience. Plant located central Atlantic state. Address Ad No. 4987, Croplife, Minneapolis 40, Minn.

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Aggressive individual, age 25-35, to handle sales contacts in Southeast or Midwest area; also service experimental stations. Must have degree in Agriculture. Excellent opportunity to join staff of well-established basic agricultural chemical manufacturer. Send detailed resume and salary requirements to Velsicol Chemical Corp., 330 East Grand Ave., Chicago 11, Ill., attn.: Sales Mgr. Agricultural Chem. Div. All replies held strictly confidential.

TECHNICAL REPRESENTATIVE

Excellent opportunity in our Technical Service is offered a recent graduate in Engineering or Chemistry. Company is large supplier to the fertilizer manufacturing industry. Several months' training will be required before assignment in a territory consisting of several states. Considerable travel is expected by company auto. In your reply please send detailed resume of education, professional training, and experience, accompanied with a recent photograph. Address ad No. 4994, Croplife, Minneapolis 40, Minn.

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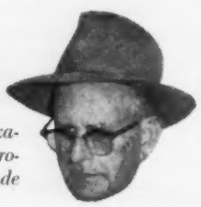
THESE MEN HAVE LEARNED FROM EXPERIENCE THAT TOXAPHENE MAKES DOLLARS...AND SENSE

Hartford Jackson, Columbia, La. *"I set about the best cotton crop I have ever seen, following the toxaphene, toxaphene-DDT control program . . ."*



D. L. Hall, Eudora, Ark. *"The toxaphene and toxaphene-DDT control program certainly worked for me, and made me money . . ."*

W. E. Moore, Sherrill, Ark. *"We were able to pick cotton two weeks earlier on the acreage where we followed this program. It really paid off for us . . ."*

H. C. Bradney, Montrose, Ark. *"This program saves me expensive late-season applications and does an excellent job. Last year I cut my insect control costs in half . . ."*

O. L. Cox, Ruleville, Miss. *"I got on the toxaphene program early in the season and continued on a regular schedule. I believe those six early applications paid more dividends than anything we did with our cotton crop all year long . . ."*

P. E. Cloutier, Bermuda, La. *"We set one of our best crops last year, and we think the toxaphene, toxaphene-DDT insect control program was a big factor. We're basing our 1959 program on the same plan . . ."*

Morris A. Roberson, Gilliam, La. *"I like the early production and early harvest that comes with the toxaphene insect control program. We had good control all season, and I plan to use the same program this year . . ."*

Clarence R. Smith, Cleveland, Miss. *"We believe in this program. It gave us excellent insect control, saved us money, and helped us make a cotton crop under adverse conditions . . ."*

O. L. Garmon, Jr., Marks, Miss. *"I used the toxaphene program on more than 700 acres of cotton. I know you need to get the overwintered boll weevil, and this program does that. I had good insect control all year . . ."*

Insecticide salesmen have to do more than just take orders for dusts and sprays. In the Mid-South, for example, progressive formulators and dealers are showing cotton farmers how a planned, season-long insect control program based on toxaphene can be the most satisfactory—and profitable—practice. These statements from farmers already following such a program reflect the growing interest in more effective use of insecticides.

TOXAPHENE

A product of the Agricultural Chemicals Division
HERCULES POWDER COMPANY INCORPORATED
900 Market Street, Wilmington 99, Delaware